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Vol. 2 #11-16

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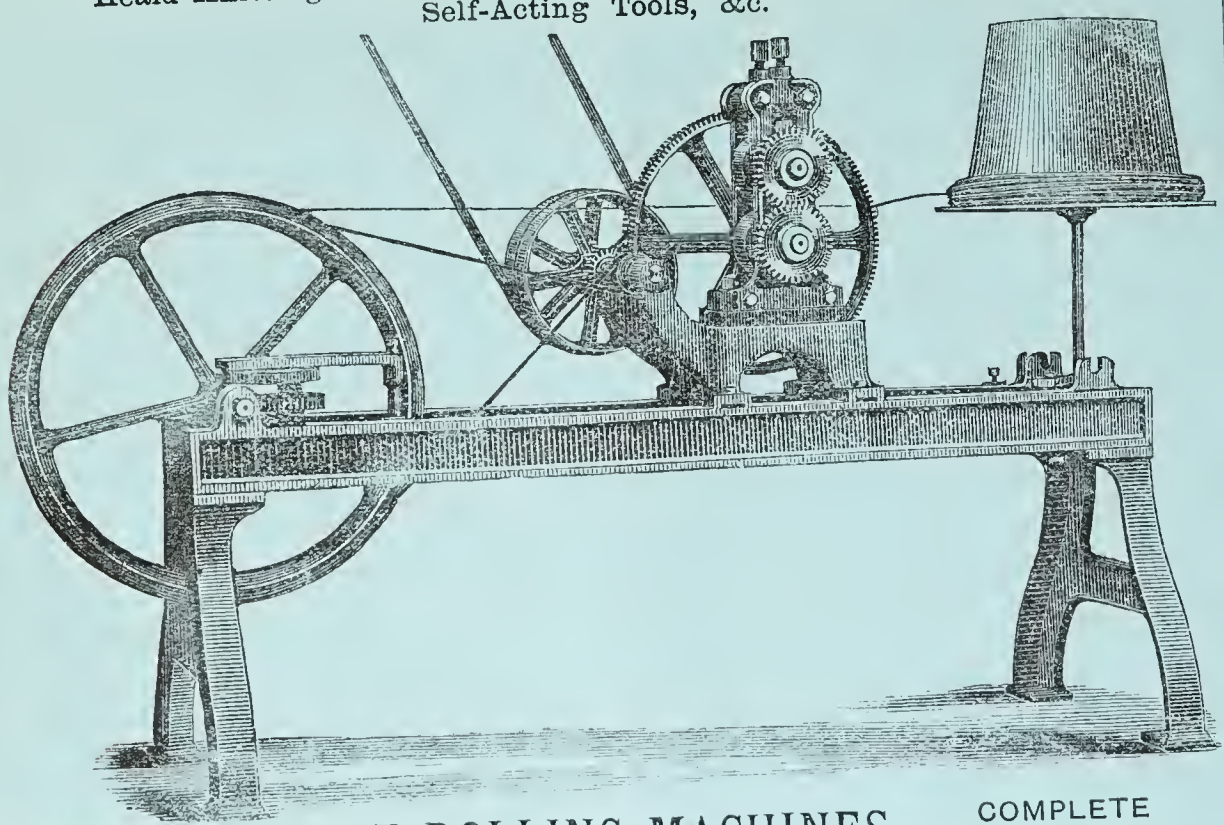

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Contents.

	Page.
The Proposed Tidal Waterway to Manchester	1
Silk	2
Windsor Tapestries	2
An Improved Picker for Weaving Woollen and other Heavy Goods	2
The Production of Rhea	3
Disintegrating Jute and Fibrous Stalks	4
Manufacture of Kidderminster Carpets	4
Wool-Combing Machinery	5
Scientific and Art Notes	5
Original Designs	6
Monthly Trade Reports	6
Original Coating Designs	6
Fine Art and Industrial Exhibition at Halifax	6
The Bradford Technical School	7
The Spanish Tariff	10
Book Notice	10
Odds and Ends	10
The Gazette:—	
Bankruptcies, Liquidations, &c.	11
Dissolutions of Partnership	11
Bills of Sale	11
Letters Patent:—	
Applications for Letters Patent, etc.	11
Copyright of Designs	12

Illustrations.

View of Bradford Technical School.
Four Designs for Matelassés.
Two Designs for Tapestry Fabric.
Parkinson's Patent Temple.
Pratt's Velomotor.
Clayton's Gas Engine.
Oldfield and Walton's Leather Belting.

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The Proprietors will feel greatly obliged if any of their readers in making enquiries of, or opening accounts with Advertisers in this paper, will kindly mention the *Journal of Fabrics* as the source from whence they obtained their information.

To our Readers.

Numerous inquiries having been made for back numbers of the Journal, we beg to inform our readers that all the numbers from the commencement to February are out of print. We have however reprinted our designs and have a stock of 18,000 copies on hand, which we shall be happy to supply in the order in which they were originally published, at 6d. per set, each set representing one month's issue.

The Proposed Tidal Waterway to Manchester.

THE practicability of constructing a tidal waterway to Manchester, the question of which has been occupying the minds of a number of manufacturers, merchants, and others in Manchester for some time past, was the subject ventilated at a meeting held at Didsbury on the 27th ult., at the residence of Mr. D. Adamson. There was present a large number of gentlemen from different parts of Lancashire, who are showing great interest in the scheme. To our minds the chairman (Mr. Adamson,) Mr. Fulton, and Mr. Hicks, made out a strong case in favour of going forward with the project. Mr. Adamson said the subject of a tidal waterway to Manchester was one of much importance, and he hoped they would not separate without coming to the conclusion that they ought to take action thereon. If nothing of this kind had been done before, if they would have to fight a battle such as was fought in 1824-5 before the Manchester and Liverpool Railway was made, the difficulties before them would be very great. But, fortunately for them, a number of works of this kind had been accomplished and executed in our day. The case that most fully applied to the proposed tidal waterway was that of the Suez Canal. He found that some portions of the press got alarmed because the Mersey was somewhat different in character to the rivers whose improvement had made Glasgow and Newcastle-on-Tyne prosperous. It was true that the tide came up to both these towns, whilst in the Mersey the tide came only to Warrington. Between Warrington and Manchester they would have deep cutting, and the waterway would assume the character of the Suez Canal. The section he held in his hand of the Suez Canal was drawn to a scale of one inch per mile longitudinally and one-eighth of an inch vertically. This canal was a tidal navigation in a minor degree, as there was not much flow in either direction. There was solid cutting the whole way except through the Bitter Lakes, and even here there was some dredging, the bed of the lakes having to be lowered. The distance cut through was 50 miles, the depth averaging 26ft.. This was done in a barbaroûs country, where it was difficult to get skilled labour. Since this canal was completed great advances had been made in machinery for dredging and excavation, and similar work would now be done at a much cheaper rate. The Tyne and the Clyde were parallel only to a degree. In both these cases they had to excavate slowly by dredging, and that under difficult conditions; and when they remembered that the work was done piecemeal and without any general pre-arrangement, it was no wonder that it was difficult. As to the proposed waterway from Liverpool, they would see from the diagram he held that there was an enormous depth of water outside Liverpool, except at the bar, which was a great and serious interruption to the navigation of the Mersey. If the contemplated tidal canal were excavated it was probable that the additional scour would remove the bar, which would be an immense advantage to Liverpool. It has been said that the wisest plan would be to have a system of locks between Liverpool and Manchester. His own impression was that if this tidal canal was to be a success it must be made free from any interruption; so free that a steamer could come to Manchester whatever the condition of the tide, and go away at any time, night or day. To effect this they would want 22ft. of water at low water as compared with the 26ft. of the Suez Canal. On Saturday he went over the course of this contemplated tidal waterway. He began by going to the top of the grand stand at the racecourse, and looking at the plateau between that point and Warrington. Instead of seeing many difficulties in the way, it appeared to him that there was nothing wanting but solid hard labour in excavation. They had a beautiful open ground, and, he fancied, a very favourable substrata. As to the probability of this waterway paying, he believed it would be one of the most profitable things that had been done in this country. Unlike a railway, when they had once got the canal cut they would have no steel or iron rails to provide and maintain, and no rolling stock to make and support. It would effect a great saving in the cost of bringing cotton and other raw material to Manchester, and of taking away manufactured goods. He had been told that gentlemen bought cotton in India and brought it into London, and that the cost of getting it from London to Lancashire, where it was to be consumed, was greater than the cost of bringing it from India. If anything had a bright prospect, it was wholesale carrying into Manchester by a direct tidal navigation as now suggested. Mr. Fulton then made an explanatory statement of the plan for the improvement of the Mersey and the Irwell, and for the establishment of a tidal navigation from the ocean to Manchester, so as to admit of ocean going steamers entering that city; after which Mr. Hicks, by very careful reasoning and by going thoroughly into the financial aspect of the question showed that the canal could not fail to pay a fair dividend to shareholders. A number of resolutions in furtherance of the scheme was carried, the last of which was to the effect that a guarantee fund be obtained to cover such expenses as might be incurred by the provisional committee in carrying out the objects for which it was formed.

Messrs. J. S. and S. Smith, Carpet and Rug Manufacturers, (formerly of Thistle Street, Glasgow), we are requested to state have removed to Nursery Mills, South York Street, Glasgow.

13718

SILK.

(*Continued from page* 112, *Vol.* 1).

To silks, in ancient times as at present, were given a variety of names significant of the manner of weaving, the pattern woven, the colour, the country from whence brought, or the particular use to which at some time they had been applied. As all these fabrics came originally from the east, the names are either of eastern origin, or of Greek or Latin, or of the two mixed together, but are so shortened or altered that it is difficult to trace their Persian or Arabic derivation. Among the names used to indicate the kind of texture or the manner of weaving silks, we have :—*Examitum*, xamitum or samit, so called in old English writings, and in later English samicta ; it is made up of two Greek words, meaning "six threads"—the number of threads in the warp—hence of extra good quality. The *examits* are now represented by the strong silk with a thick thread called Organzine, for the woof, and a finer one for the weft. *Holosericum*, the warp and weft of which are entirely pure silk. *Ciclatoun* (bright and shining), altered to siclatoun, siglaton and cyclas, was a thin, light and glossy fabric, often mixed with golden thread to render it more brilliant. It was used for ecclesiastical as well as for secular purposes. *Cendal*, became cendallus, sandal, sandallin, cendatus, syndon, and syndonus ; ecclesiastical garments were often made or lined with this material ; it was also much used for military dress. A stronger kind of cendal was manufactured, which was called in the Latin inventories in the thirteenth and fourteenth centuries, "cendatus afforciatus." *Syndonus*, or sindonis, was a better quality of cendal, and *Taffeta* was a cheaper sort of silken fabric than cendal. The two latter were, in the middle ages, used mostly for linings. The Moors (Saracens) of the south of Spain made so much improvement in the weaving of cendal that they gained a good market for it in England. It was called, from the Saracens, "saracenicum," but was afterwards shortened to "sarcenet," and in the fifteenth century it took, by degrees, the place of cendal. *Satin* was first made in Asia, and then in the countries bordering the Mediterranean ; it was called "Aceytuui" —the name by which it is now known in Spain. The Italians shortened it to "zetani," and the people of the west dropped the "i," and in time it smoothed itself into "satin," (the present French name). In Italy it is now "Raso." Satin seems to have been unknown in this country until the fourteenth century, but after that time it was not only used for church purposes, but also for the dress of the upper classes, for flags, &c. *Camoca*, camoka or camak was first used in England about the end of the fourteenth century, and is supposed to have been a mixture of fine camel's hair and silk—manufactured in Asia. It soon rose to great repute and was used for clerical vestments, church decorations, the robes of princes, and the adornment of palaces. The *Cloth* of *Tars* was probably made from the wool of the Tibet goat mixed with silk. *Velvet*—it is not certainly known from what country velvet first came, but it is most likely that it was brought either from China or from Central Asia, and that the earliest places at which it was made in Europe were the South of Spain, and then in Lucca. It is possible that the Italians may have been the first European nation to weave it, for the (Italian) name itself "Velluto," means something which is hairy or shaggy, and their knowledge of fustian may have led them to weave silk in the same manner. In time other nations took up the manufacture, and by degrees it was greatly improved, until at length, the web known as diapered velvet was produced. This consisted of a pattern raised on a ground of silk or gold—sometimes the pile was a double one—one height of patterns rising upon another of the same colour. The finest of these velvets were made in Italy, Spain, and Flanders. *Diaper* from "diaspron," (I separate) was a name given bg the Byzantine Greeks to a one-coloured, yet patterned silk, to signify that which separated itself from things about it. The Latins altered the name to "diasper," and the English to "diaper." Like all other very valuable fabrics it was much used for ecclesiastical vestments, and the finest specimen of this class that we have on record was given by Edmund of Cornwall to St. Paul's Cathedral. It was "a cope of diaper of Antioch colour covered with trees and diapered birds, of which the heads, breasts, and feet, as well as the flowers on the trees, were woven in gold thread." By degrees the term diaper was used in a wider sense—it came to indicate not only any one—coloured yet patterned fabric of silk, but also webs of cotton, woollen or linen ; walls of rooms were said to be diapered when the same ornament was repeated and sprinkled over them. *Cadas*, carda, and carduus—this was a silken web, woven from the outer wrappings of the cocoon and used generally ior inferior purposes. Frequently, instead of being spun, it was used as wadding for dresses.

Windsor Tapestries.

Referring to the production of Tapestries at the Royal factory at Old Windsor, the *Pall Mall Gazette*, says :—"Among the earliest works produced were the hangings for the Prince of Wales's pavilion at the Paris Exhibition of 1878, which were treated, perhaps, a little too much like pictures. They dealt with scenes chosen, appropriately enough, from the *Merry Wives of Windsor* ; and ever since their execution the factory has been busied chiefly over tapestries of a similar pictorial character, from designs by the late Mr. E. M. Ward, R.A , Mr. J. E. Hodgson, R.A., Mr. Herbert Bone, and others. Attempts have also been made to procure from English artists cartoons of the decorative kind which distinguished French work in the eighteenth century, but so far in vain. The spirit of Boucher has to be invoked in his own country: our heavier hands make sad havoc of the feathery trees, cupids, and fluttering draperies which are wanted to form back-grounds for Louis Seize furniture. But while it is inevitable that English tapestry must depend for success more on severe taste, harmonious colouring, and careful executien than on playfulness of fancy, it should not be forgotten that the capabilities of a woven fabric are very different from those of a painted panel or canvas. In the latter the artist has at command tones varying from white to black ; in the former the shadows and reflections cast by every thread of the uneven surface change black and white into dark and light grey severally. Besides which, there is no possibility of giving various degrees of transparency to the colours. Under such conditions all subtlety of modelling is out of the question. Broad contrasts of light and shadow should be aimed at. The foliage of trees should be either conventional or that of early spring before they become "cabbagey ;" the darks should be relieved against the lights ; and, in a word, the general result should be decorative rather than "expressive "—using the word in its technical sense. We have seen some work from the Windsor looms in which these principles were neglected and attempts made to carry out feats of modelling which are difficult even in paint. But, as those who furnish the cartoons become more familiar with the requirements of the material, faults like these will disappear ; and it is quite possible that the high-colour faculty, which has always manifested itself in the best periods of English art, may in time give peculiar distinction to our tapestries. We believe that it is intended at some future time to add the manufacture of coarser hangings, such as those of Arras and Southern Flanders, to that of the finer qualities to which the work is at present restricted."

An Improved Picker for Weaving Woollen and other Heavy Goods.

An invention having reference to an improved picker to be employed in looms, for weaving woollen and other heavy goods, has been patented by Mr. E. Hallas of New Street, Huddersfield. The pickers at present employed have a round hole formed in them in which is placed a piece of india rubber for the shuttle to bound against when it is driven home. In practice it is found that the picker does not always strike against the india rubber, the point of the shuttle frequently striking against the metal flange of the picker, doing damage to both shuttle and picker. Another disadvantage is, that in consequence of the india rubber being so small in diameter, the part of the shuttle has a tendency to strike so very often in one place that the rubber is soon damaged and rendered worthless.

To remedy these defects is the object of the patent. It is accomplished by making the hole in the picker, for the reception of the india rubber, of an oval form, and placed in a vertical position in the picker, by which means the shuttle has more surface to strike against, and the danger of striking the flange is rendered impossible.

Instead of the opening in the picker being made oval it may be made round, but large in diameter, and so placed that the increased size of opening is brought higher than the picking spindle and not below it.

The opening is increased from one inch diameter and upwards, and is made bell mouthed, so that the rubber has room to expand at the part which comes into contact with the shuttle.

By the use of pickers, as described, when the checking surface is increased in diameter, the shuttle is more certain of being kicked, and the drawing of the staples and throwing of the shuttle is prevented. Although more india rubber is required to fill up the increased size of opening made in the picker, the use thereof has been found a considerable saving; and as the metal flanges do not get knocked by the shuttle, the picker is far more durable than the present construction of picker.

The Production of Rhea.

IN a recent lecture delivered by Mr. J. R. Royle, before the Society of Arts, on the production of tea, chinchona, wild silks, and rhea in India, some very valuable information which must be of great interest to manufacturers was given. After referring at some length to the production of tea, chinchona, and wild silks, the lecturer dealt in an exhaustive manner with the cultivation, &c., of rhea. He said, "the fibre known under the various commercial names of rhea, ramie, and China grass, is one that has, of late years, attracted considerable attention, owing to the rewards which were offered by the Government of India for the best machine or process adapted for stripping the fibrous envelope of this nettle from the stems, and for freeing it from the gummy matter with which it is highly charged."

Efforts to encourage the production of this plant in India were commenced early in the present century, when Dr. Roxburgh obtained a few plants of a species of *Urtica*, which he named *Urtica tenacissima* (on account of the great strength of its fibre), from Sumatra, and from these a great number of plants were reared at the Hon. Company's Botanical Garden at Seebpore. The first fibre from these plants was sent to England in 1810, and was very favourably reported on as a cordage material, on account of its exceeding strength; owing, however, to the lack of suitable machinery for its preparation, no further efforts worth mentioning were made for some years. In 1840, Colonel Jenkins discovered the plant growing wild in Assam, and it had, even before this date, been found to be identical with one grown in the Rungpore and Dinagepore districts, under the name of khnokhoora. Not long afterwards, Dr. Falconer and Sir W. Hooker were able to identify this *Urtica*, khnokhoora, or rhea, as the same plant as that from which the Chinese grass-cloth was made, and in 1854, the Court of Directors, in forwarding to India a memorandum on the fibre, by Dr. Forbes Royle, directed the purchase of ten tons of rhea fibre annually, for three years, in order to encourage its cultivation. After this, the fibre being well known in England, it was considered that its further development might be left to private enterprise; events, however, proved that the obstacles to the development of its commercial use had not yet been removed.

In 1869 the Government of India took the matter up, and after obtaining all the information that could be furnished by the Agri-Horticultural Societies of India, and by gentlemen who had been for years engaged in experiments with rhea, came to the conclusion that all the conditions necessary for its cultivation in India on a large scale existed, and that all that was wanted was some machine or process suitable for separating the fibre from the stems and bark of the plant in its green state. They therefore issued a notification offering prizes of £5,000 and £2,000 for the two best machines, the merits of which were to be tested in India, the principal condition being that fibre worth £50 per ton in the English market, should be produced at a cost not exceeding £15 per ton in India. The trials were eventually fixed to take place in April, 1872, at Saháranpur, and a plantation of rhea was there established in order that the necessary raw material might be obtainable on the spot. No less that 32 competitors entered for the trials, but at last only one—Mr. Greig—put in an appearance. Mr. Greig's machine was duly tried, but the cost of preparing clean fibre by it was found to exceed the stipulated £15 per ton, while the samples of fibre prepared were valued in London at only £28, and declared fit only for cordage purposes. This being the case, it was impossible to award the full amount of the prize to the inventor, but he received £1,500 in recognition of the merit of the machine.

During the next few years Dr. Forbes Watson—whose name will always be associated with the attempts to bring rhea into use in manufactures—exerted himself with great energy and success in this country in endeavouring to make the fibre more generally known, and he was fortunate in obtaining a supply of China grass seed, as well as of green stems, which were advertised under the authority of the Secretary of State for India, and distributed to all applicants who were willing either to try to grow the plant or to experiment on the stems. In 1875, Dr. Forbes Watson pointed out the extreme difficulty of inducing any large number of competitors to incur the expense of taking their machines to India in order to compete for a prize, and suggested that trials should be held in this country instead. It was therefore at last determind that experiments should be made in London, both with green stems grown in Europe, and with dried stems procured from India, and it was hoped that everything would have been ready for the trials by November, 1875. Several inventors entered their machines for competition, although no prize was offered; but, unfortunately, owing to unforeseen difficulties, it was found impossible to hold the proposed trials.

This being the case, the Government of India, in 1877, issued a new notification, in which, after referring to the prize offered in 1869, and to the fact that the only machine brought forward to compete for it was not considered entitled to the full reward, and had not since been adapted by the inventor to practical use, they proceeded to state that the demand for rhea still continued, and that the conditions which induced the Government at that time to offer a prize, remained substantially unchanged. They therefore again offered a prize of Rs. 50,000 to the inventor of the best, and Rs. 10,000 to the inventor of the second best machine or process for preparing rhea fibre; the machine or process to be capable of producing, by animal, water, or steam power, fibre on an average value of not less than £45 per ton in the English market, at a total cost of not more than £15 per ton, laid down at any port of shipment in India, or £30 per ton in England, after payment of all charges usual in trade. The competition for these prizes was fixed to take place at Saháranpur, in August and September, 1879, and it eventually took place in September and October of that year. As many as 24 applications for permission to compete were received, but only 10 competitors finally arrived at Saháranpur, and three of these withdrew before the commencement of the trials, leaving seven, viz.: M. Van der Ploeg, M. Nagoua, Dr. Collyer, Messrs. Labérie and Berthet; Mr. Cameron, Mr. Amery, and Mr Blechynden, to compete for the prizes. The fibres prepared by each of the competitors were carefully packed and sent to London for valuing, with the result that none of them were valued at anything like the stipulated £45 per ton; the highest value, indeed, affixed to any of the samples by Messrs. Noble and Co., was £26 per ton. Messrs. Mark Dawson and Son also examined the specimens of fibre, and reported very unfavourably on them, saying that even the best were a long way from being equal to the fibre imported from China. But they offered to pay £25 per ton for one or two tons like some of the best samples, in order that they might put it through all their various processes of manufacture, and see what it was worth. At this time China grass was selling at £50 per ton in the English market.

On receipt of these unfavourable reports, the Government of India felt themselves unable to award the prizes which had been offered; but they made awards of Rs. 5,000 each to Messrs.

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Van der Ploeg and Nagoua, and of Rs. 1,000 to Mr. Cameron, the competitors whose samples were considered the best by the English exports. Judging from the reports on the samples, the Government of India came to the conclusion that it did not seem probable that India rhea fibre would be able, at present, to compete successfully with the Chinese product, and that in most parts of India the cultivation of the plant could not be undertaken with profit. They considered that the soil and conditions of climate might be found suitable in parts of Burma, Upper Assam, and in some districts of eastern and northern Bengal; and that if it could be grown in such places, with no more care than is required for a superior crop in an ordinary well-farmed field, it might possibly succeed commercially. They were, however, of opinion that it would be inadvisable to renew the offer of a prize for a suitable machine until such time as private enterprise should have shown that the cultivation of the rhea plant could be undertaken with profit in India, and that there was real need for an improved method of preparing the fibre. Intending growers of the plant can, however, still be provided with roots from the Botanical Gardens at Howrah, for the purpose of starting their plantations.

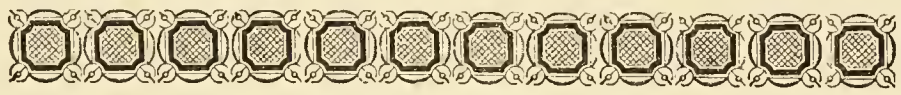
Here, then, for the present, at least, the matter of the utilization of Indian-grown rhea rests, so far as Government action is concerned, but private individuals are still diligently working, and will, it is to be hoped, continue to work until the problem of putting an Indian-grown rhea fibre into the market at a price and of a quality which will compete with China grass is solved.

(*To be Continued.*)

Disintegrating Jute and Fibrous Stalks.

An improved apparatus, &c., for the disintegrating of jute and other fibrous stalks, which first splits and then removes from the stalks the pith, shell, skin or bark, has been patented. In carrying out the process a machine is used consisting of elastic feed rollers, of a knife for splitting the stalks, and of interlocking scrapers for simultaneously removing the pith, the shell, the skin or bark from the split stalks.

The apparatus consists of a frame work having a covered top similar to an ordinary table, on which the jute or other material to be disintegrated is placed so as to be ready at hand for passing into the machine. To the covered portion is fixed an incline, down which the stalks are caused to slide and to pass between two feed rollers connected by suitable gears and revolving in opposite directions. These feed rollers are made of india-rubber or other elastic material, so that they do not crush the stalks, but serve to force the same forward against a knife where they are split, each into two parts. In passing from this knife the two parts are exposed to the action of interlocking scrapers, caused to revolve in opposite directions by means of gears. These scrapers act on both sides of the material, and separate from the same simultaneously the pith, and also the skin, shell, or bark. When the pith and outer bark have been removed from the stalks in the above manner, the fibre is then boiled in an alkaline bath, and passed through water by means of a gaug of rollers which sends the same forward, squeezes it, and passes it through the water, so as to remove the quin.



Manufacture of Kidderminster Carpets.

An invention has recently been patented which relates to improvements in the weaving and manufacture of Kiddeminster, Scotch, or Ingrain Carpets, and other similar two or three ply fabrics, as for example, what are technically named "shotabouts," that is, carpets or fabrics which are woven with alternate threads of different colours for the warp and weft The main object of this invention is to produce carpets or fabrics having more clearly defined patterns both on the upper and under side, at the same time obviating what is known as "gazing" or showing of threads of one ply through the other where the plies are mixed, and equalizing the strain on the warp threads throughout, and making the cloth more easily wefted. Having briefly stated the object of this invention, we will proceed to the description of the system employed by the patentees to effect this object.

In the ordinary weaving of two or three—ply carpets and fabrics, a definite pattern or figure is produced on the upper or outer side of the top ply, by the action of the jacquard mechanism and harness on the warp threads, the warp threads of the different plies always being raised in the same order and relation to each other, all the alternate, or odd thread of warp being up at the same time, while all the alternate or even threads are down, or *vice versa*, when the weft thread of that ply is being thrown. This being the case in all instances where more than one eye is used in the needle of the jacquard machine, and by the system of cutting cards hitherto adopted, the same result has always followed, whether with one or more eyes in the jacquard needle. Each ply of cloth in all cases is thus always worked with the same warp threads throughout, working the right side of each ply or plies always uppermost, and showing the wrong side of whatever ply goes under to the back or outside of the cloth, the "shotabout" weft threads having different warp threads over them on the under or outside of the cloth. In this mode of weaving also the warp when carried from one ply to another passes at times direct from the lower to the upper surface of the combined plies, and at times lies loose between the plies. making where the plies are mixed only single cloth, rendering the strain on the threads very unequal and preventing equal beating up of the weft. According to this Invention the fabric is woven so as to reverse the back ply and bring the respective warp threads over the weft threads of corresponding colour, thereby securing a well defined pattern on the under or outer side of the cloth free from "gazing" on either side, while by causing the warp threads to pass only from one side of either ply to the other at a time no unequal strain is produced, making the fabric really double, and only woven together where the warps cross or change from one ply to the other at the outlines of the pattern. For the purpose of enabling carpets or other fabrics to be woven in this manner, a jacquard needle is employed with a single eye for each warp thread of the pattern or repeat of the pattern, and the cards which act on the needles are cut as described below, so that the defined pattern of the under ply may be produced on the outside, and the same coloured warp made to cross the same coloured weft threads on the outer sides of the fabric. There is also introduced a third weft thread in the case of two ply, or a fourth weft thread in the case of three ply carpets, to appear on the front or on the back of the carpet, as desired on the pattern, on any cord of the design, the extra weft or warp threads passing between the piles of cloth when not wanted to appear on the front or back of the cloth. This is effected with or without the extra warp for the additional or extra weft, and applies either to "shotabout," self-coloured, pillared, or shaded coloured carpets. These two processes are wrought with one eye in the needle of the jacquard machine, and the cards are cut in such a way as to work the cloth without either heddles, journals, or double necked harnesses. In weaving by either of these processes one eye only is used in the needle of the jacquard machine, through which passes one tail or harness threda when knotted tails and comberboards are used, or one wire when hooked wires and branches are used. One needle may be employed for every harness thread in the pattern, which may be any size desired; or when small patterns are used as many harness threads as there are repeats of the pattern may be tied to each knotted tail or hooked wire of the jacquard machine. If it is desired to cut the cards for a four shuttle "shotabout" which may be any four colours, as, for example, with olive and white for one ply, and red and black for the other, and olive and white being the ground, and the red and black being the figure; and taking the olive and red for the odd threads of the warp, and the white and black for the even threads of their respective plies of cloth, the two seperate plies being on different parts of the jacquard machine and on the corresponding parts of the loom card. For the olive shuttle the card is cut to raise all the olive threads that are to appear on the top (which in this case will be the odd threads of the one ply and the odd cords of the design), so that they will be over the olive weft thread on the front and allow them to remain down where the olive is to appear on the back, and so that they will be under the olive weft thread on the under or outer side. When the olive is to appear on the back, the white or even warp threads are raised; then on the other part of the card are cut all the red and black warp threads on the same weft cord of the design when they are to appear on the front, and allow all the rest of the red and black to remain down when they are to appear on the back or under side. For the red shuttle which will be the odd warp threads or cords of the design for the other ply, the card is cut so as to raise all the red warp threads that are to appear on the top so that they will be over the red weft thread on the front and allow them to remain down when the red is to appear on the back so that they will be under the red weft thread on the under or outer side. and when the red is to appear on the back the black or even warp threads are also cut. Then on the other part of the card are cut all the olive and white warp threads on the same cord of the design. When they are to appear on the front and allow all the rest of the olive and white to remain down, when they are to appear on the back or under side. For the other two shuttles, namely, white and black, the card cutting proceeds in a similar way, only operating on the even and odd warp threads or cords of the design in reverse order. Then for a two or self coloured carpet the cards are cut in the same way, say, for instance, black and scarlet; the black being the ground would correspond to the olive and white, and the scarlet being the figure would correspond to the red and black, so that for the alternate weft cords of each colour the odd and even warp cords would be operated upon. When the extra colour is desired it may be put in with "shotabouts" or with solid or self coloured warps, whatever warp colour of the web is chosen to work with the extra weft colour then the warp of that colour or ply is cut to rise above the weft thread of same colour or ply, when the extra colour is to appear on the top and allowed to remain under the wefts of both plies when the extra colour is to appear on the under or outer side. Then when the extra colour weft thread is put in the card is cut to raise all the warp threads that formed cloth last on the top, and all the warp threads are allowed to remain down that formed cloth last on the under side, the extra weft colour passing between the forming cloth on the top only with the warp that was held above both plies of weft, and forming cloth on the back only with the warps that were left under both plies of weft. These descriptions of cutting the cards also apply to three-ply cloth, only more extended.

Wool-Combing Machinery.

On Wool-Combing by Modern Machinery.*

By Mr. F. M. T. Lange, of St. Achuel-les-Amiens.

(Continued from Page 114, Vol. I.)

MANY machines have been brought out since Collier's, but it is quite unnecessary to attempt to describe them all. The machines of greatest note are tabulated below, in order of priority. Heilman's, 1845, (often called Schlumberger's on the continent); Lister and Donnisthorpe's, 1849-51-52; Preller and Eastwood's, 1852; Noble's, 1853; Crabtree's, 1854; Lister's, 1856, (improvement on Noble); Rawson's, (improvement on Lister); Holden's, 1856; Smith and Bradley's, 1871; Mirfield and Scott's, 1870; Pratt's, 1879; Lange's, 1881.

Heilman's machine has been fully discussed in Mr. B. Fothergill's paper (Proceedings, 1853, p. 151). It may shortly be described as a working comb, to comb the end of a sliver with mechanical means for drawing off the portion combed to form a detached "tuft." The fibres of which the hinder part of this tuft was composed were then drawn through teeth, so that the whole was clean; and the tufts were pieced up by being laid one on the other. It is believed that this is the first case in which detached tufts of wool were drawn through teeth to comb them. This was essentially a short-wool machine, not adapted for long wool, but well adapted for combing cotton, which up to that time had only been carded.

Lister and Donnisthorpe's machine followed shortly after. This takes hold of the front dirty end of a sliver of wool lying in screw gill by a positive nipping apparatus composed of two jaws of metal, one covered with leather; these jaws draw out a portion from amongst the teeth of the screw gills by main force, and with such violence indeed as to break and strain some of the fibres. The tuft thus detached is then deposited, with the clean end outwards, on the teeth of a circular comb, heated by steam, thus forming a fringe which is drawn off by drawing rollers. A dabbing brush was used to press the wool down into the receiving comb. All the noil in the circular comb was stripped out before it came round again. This is a long-wool machine, though it can comb tolerably short wool also. It created quite a revolution in the trade, and was very successful.

Preller and Eastwood's (also known as the Opell on the continent, from the name of the inventor) cleans the tuft of wool on cards, not combs, and then pieces it up to form a sliver. The tufts are taken by a comb, fixed on the end of a reciprocating arm; the wool is taken from the end of the sliver (fed in by rollers intermittently) and carried past and over rollers clothed with cards, and deposited on to a receiving comb, worked by a travelling chain, from which comb it is drawn off by drawing rollers. A dabbing brush was used to press the wool down into the receiving comb. The noil was stripped off the receiving comb subsequently.

Crabtree's machine differs from the last named, inasmuch as, in place of a single reciprocating arm carrying a comb to take the deposit tufts, there are several arms having separate combs on them. The arms are capable of turning round on an axis, so that, although when they take wool they are travelling point first, when they deposit the tuft they are travelling head first. The cleaning is by card rollers, very much as in the last machine, and the noil is similarly stripped from the receiving comb.

Noble's machine is very peculiar; it consists of a large circular comb some 4 feet or 5 feet in diameter, with a smaller comb, about one-fifth of the above in diameter, placed inside it and running close to it at one point. The two circumferences travel at the same speed, and both are heated by steam. The machine is fed by a complete circular fringe of slivers, which are arranged outside and around the large comb, and are drawn from a number of "balls" or reels of slivers, about eighteen in number. The ends of these slivers are passed through open-ended boxes or troughs, hinged at their outer ends; so that, on being lifted or depressed, they lift the ends of the slivers, or deposit them in the large comb respectively; but inasmuch as they only so deposit the slivers at the very point where the large and the small circular combs coincide, they engage the ends of the slivers in both combs at once. As these combs in their revolutions separate, the wool is separated, and the fringe projecting from each is combed by the other, thus presenting two clean fringes of wool, both of which are drawn off as "top," each by its own drawing-off rollers. A quick-acting dabbing brush is used to press the wool down into the two combs at the proper point. The noil is stripped off from the small comb before it comes round again, and the ends of the slivers are lifted out of the large comb by their "boxer," and advanced a little, ready to be again deposited at the right point into the two combs. This machine is well adapted for short wool.

Lister's improvement on Noble's consisted in applying two small circular combs, instead of one, inside the large comb, which was made larger for the purpose, thus producing a double machine.

Rawson's improvement on Lister consisted in an improved mode of feeding the circular receiving comb, by doing away with the nipping apparatus, which often injured the wool, and by causing the feeding head to advance right up to the comb, and by placing the projecting end of the sliver into it; so that, on the feeding head retiring, it combed the fringe projecting from the receiving comb, and the receiving comb combed the end of the sliver projecting from the feeding head. The outside fringe on the receiving comb is drawn off by drawing-off rollers as "top," and the short fringe projecting inside the receiving comb is drawn off by other rollers, and returned to the feeding head to pass through again and be combed.

(To be concluded in our next).

* Paper read before the Institution of Mechanical Engineers.

SCIENTIFIC AND ART NOTES.

English electric light and telephone conductors are so much appreciated on the Continent for their excellence that a brisk export business is being done notwithstanding the heavy duties such goods have to encounter.

* * * *

The Bavarian Exhibition of Industry and Art was inaugurated on the 15th of May in Nürnberg. This exhibition is said to be the most important of its kind which has ever been held in Germany. Over 3,000 exhibitors took part in it.

* * * *

The Queen has purchased three very beautifully designed tapestry panels which have been worked upon the looms of the Royal tapestry factory at Old Windsor. The subjects, each of which is woven upon a gold-silk ground, are allegorical, "Religion" being represented by a figure of St. Agnes, "Honour" by that of Richard Cœur de Lion, and "Purity" by Jeanne d'Arc.

* * * *

A French engineer has originated a plan by means of which passing ships could send messages by the submarine cables; he would float buoys with the necessary connecting wires and apparatus at intervals of a day's journey along the line of the cable, each numbered and properly lighted at night. The writer in the *Moniteur de la Flotte* considers that the plan presents but few difficulties, and would obviate much anxiety and many dangers.

* * * *

Another endeavour to raise the position of gas as a rival of electricity appears in an invention by M. Clamond, in which the gas is burst with air heated to 1,000 deg. C., the coumbustion taking place within a cone or basket of magnesium wire, which, raised to incandesence, forms a light-centre of remarkable softness, steadiness, and brilliancy. M. Clamond has succeeded in so grouping the heating and the mixing chambers that the whole burner may be enclosed in a cylinder about 2½in. in diameter and 4½in. in height. One-horse power, it is stated, suffices for an illumination of 150 to 200 Carcels.

* * * *

A brief account of some of the most common names of steel in use at present will be of service. Blister steel is made by causing the carbon of charcoal to penetrate iron in a heated state. German steel is blister steel rolled down to bars. Sheet steel is made by hammering blister steel. Double shear steel is made by cutting up blister steel and putting it together and hammering again. Crucible steel is made by melting in a hot blister steel and wrought iron, or unwrought iron, and charcoal and scrap. Bessemer steel is made by blowing air through cast iron, burning out the silicon and carbon. Open hearth steel is made by melting pig iron and mixing wrought iron, or scrap steel, or iron ore, to reduce the silicon and carbon.

ORIGINAL DESIGNS.

On our first plate we illustrate four designs for Matelassés. They might also be suitably adapted for Broché satin or velvet. These designs are drawn by Mr. R. T. Lord, of 3, Gerrard Street, Halifax.

* * * *

Our second plate represents a design in Italian Renaissance style, which is intended for Tapestry fabric, the colouring of which should be—the ground Black, the ornament Light Drab, Warm Brown, and Sage Green, with small portions of Light Blue, Dull Red and Orange. This clever design is drawn by Mr. W. R. Foster, of Shandon Place, North Merchiston, Edinburgh.

* * * *

Our third design is also intended for a Tapestry Fabric, and would make a good thing if worked on Pale Blue ground, with the flowers and ornament in Dull Pink, Fawn, Silver Grey and Maroon. This design is drawn by Mr. R. T. Lord, of 3, Gerrard Street, Halifax.

* * * *

*** We beg to inform manufacturers and others that adaptations of designs, published in the "Journal of Fabrics," can be made at the Office by experienced Designers, and that Original Designs can also be furnished at moderate charges.

MONTHLY TRADE REPORTS.

Wool.—The second series of wool sales in London which commenced on the 16th May, lasted thirty-five days. Prices at the opening ruled up to the closing rates of the previous sales, and in the case of Cape snow white wools a little dearer. With few fluctuations the sales proceeded steadily, and towards the close good wools brought higher prices, whilst inferior sorts sold slowly at a decline. In Liverpool there has been a want of animation in the market, and sales have taken place slowly at about the usual rates. In Glasgow business has somewhat improved, inquiries being more numerous, and prices are well maintained. In Bradford and Halifax no great change has taken place, staplers adhere firmly to their quotations, being sanguine of better business shortly. In Leeds and Huddersfield a steady trade continues to be done at firm rates. In the yarn and piece trade a little more has been done without any increase in prices, either in those sold for home or for foreign consumption. The American and Continental markets keep quiet.

Cotton.—There have been some fair sales during the month, but mostly on speculation, owing to the state of affairs in Egypt, the consequence has been that prices have been forced up, which the present state of the market does not warrant. In yarn and cloth the business done has not been of a nature to satisfy manufacturers. The prices procured are out of proportion to the raw material, but still they are to a great extent dominated by the price of cotton. The demand for the Continent has fallen off, that for Japan has slightly improved at firmer rates. The trade with the Levant is almost *nil.*

Woollen.—Manufacturers are at present well supplied with orders. For worsted coatings the demand continues steady in all qualities, and for cheap tweeds for suitings it is very large. For home use moderately large orders have been placed for meltons, tweeds and cheviots The export sales, especially those for Austria, Canada and South America continue large. Prices for nearly all classes of goods are well maintained.

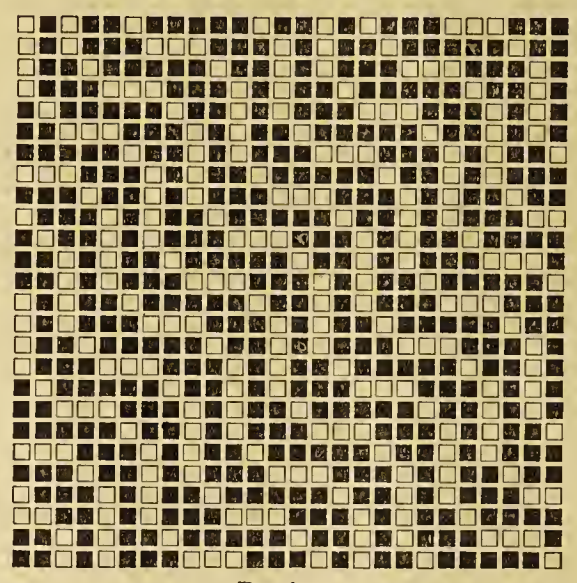
Linen.—The linen trade remains in much the same state as last month, although a fair amount of business is passing, it is at unremunerative rates. In the finer qualities of goods the demand is up to the average, but scarcely of a class to benefit manufacturers.

Carpets.—Business is generally in a quiet state, makers of Axminsters alone being busy. Orders are running out, and few new ones are obtained. Rug and Tapestry manufacturers find a difficulty in keeping their looms fully employed, owing to the unremunerative state of this branch. Prices for all descriptions are rather unsettled, owing to the state of the wool market, and to the end of the season having come.

Lace.—The trade has, during the month, been rather unsatisfactory, the demand for nearly all classes of goods has fallen off. The curtain business keeps fair, but the demand for the lower qualities is slow. Many classes of cotton laces, which were a short time ago, in good request, are now selling at reduced prices. There is no great disposition to place orders, unless at a decline in prices.

ORIGINAL COATING DESIGNS.

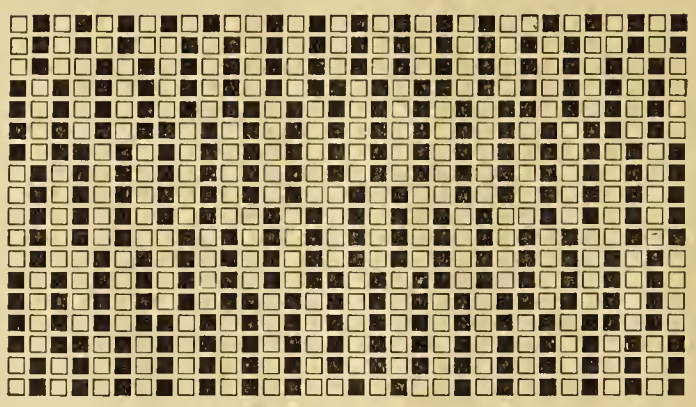
No. 7.



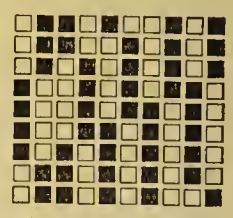
Design.

Pattern No. 7 will make a good Diagonal for WORSTED COATING, taking 26-ends loomed straight gate over. This pattern will not draft to less than 26 shafts.

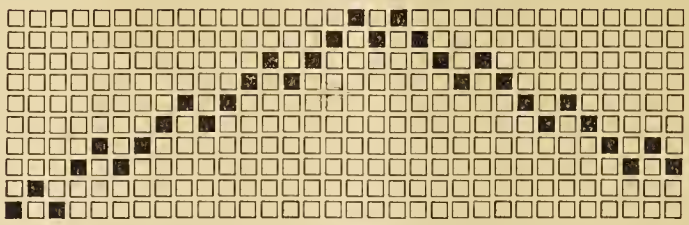
No. 8.



Design.



Pegging Plan.



Draft.

Pattern No. 8 is in the Waved Cork Screw style and will come out well as a WORSTED COATING. It is a 32-end pattern, drafted to weave with 10 shafts.

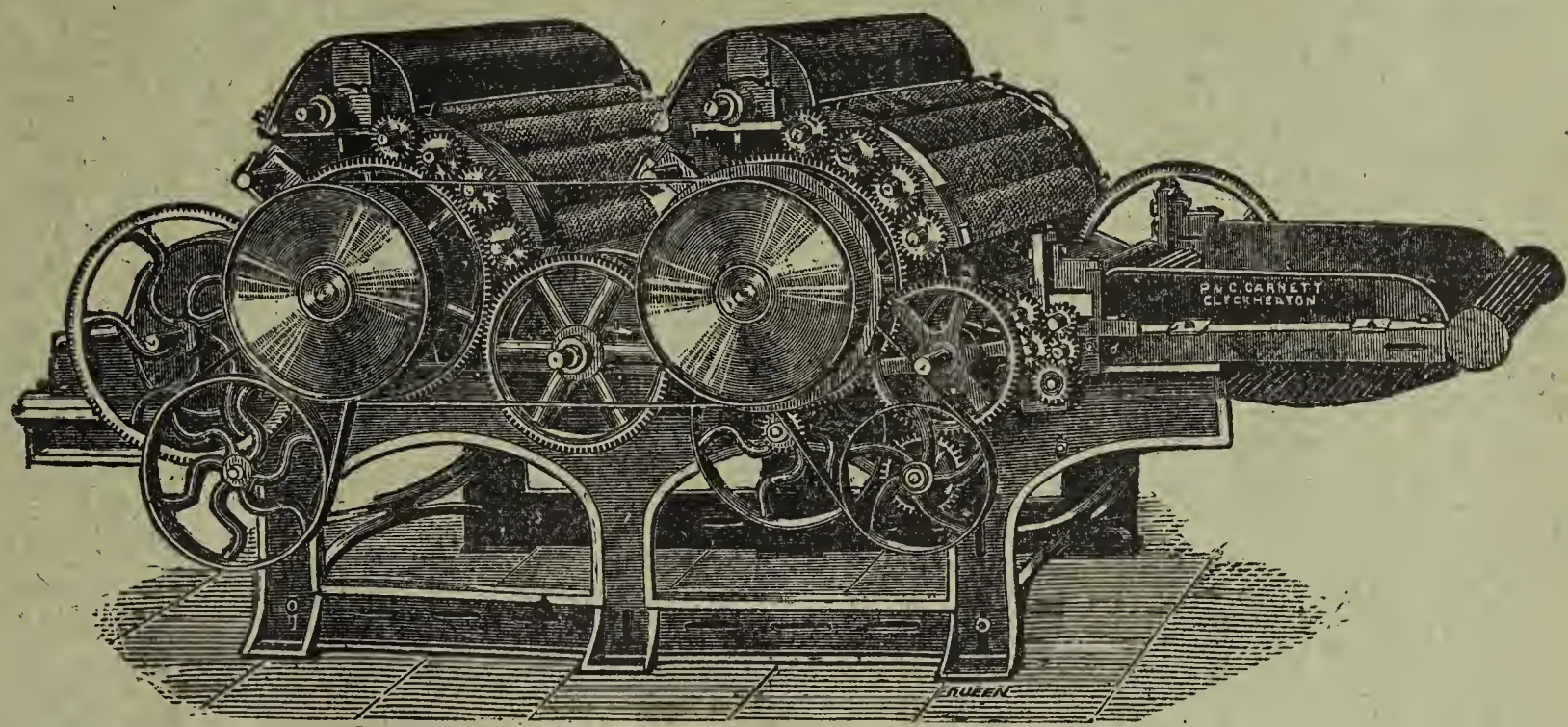
Fine Art and Industrial Exhibition at Halifax.

A project is on foot for the holding of a Fine Art and Industrial Exhibition at Halifax. A committee of management has been appointed to carry out the proposed plans, and applications for space are invited. Manufacturers, Engineers, Machinists and all others interested in Industrial, Scientific and Fine Art pursuits, who may be wishful to avail themselves of the opportunity afforded them of exhibiting, are requested to apply to the Hon. Secs., Church Institute as early as possible, that steps may be taken to push forward the project to a satisfactory issue. It is intended to hold the Exhibition early in October next.

MACHINE "GARNETT"

For Opening Hard Twisted Woollen and Worsted Waste.

À ouvrir les laines fortement frisées et les dechets de laine.



These Machines are guaranteed to be of the very best quality, both as regards material and workmanship, and possess many recent improvements.

We beg to announce that we have just obtained

ROYAL LETTERS PATENT

For improvements in these Machines, whereby we are now able to put 14, 16, and even 24 rows of teeth per inch on to the cylinders, whereas formerly we could not exceed 12 rows per inch.

Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux.

Nous venons d'obtenir

UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, Sole Patentees, Cleckheaton, Yorkshire,

WHO ARE ALSO MAKERS OF

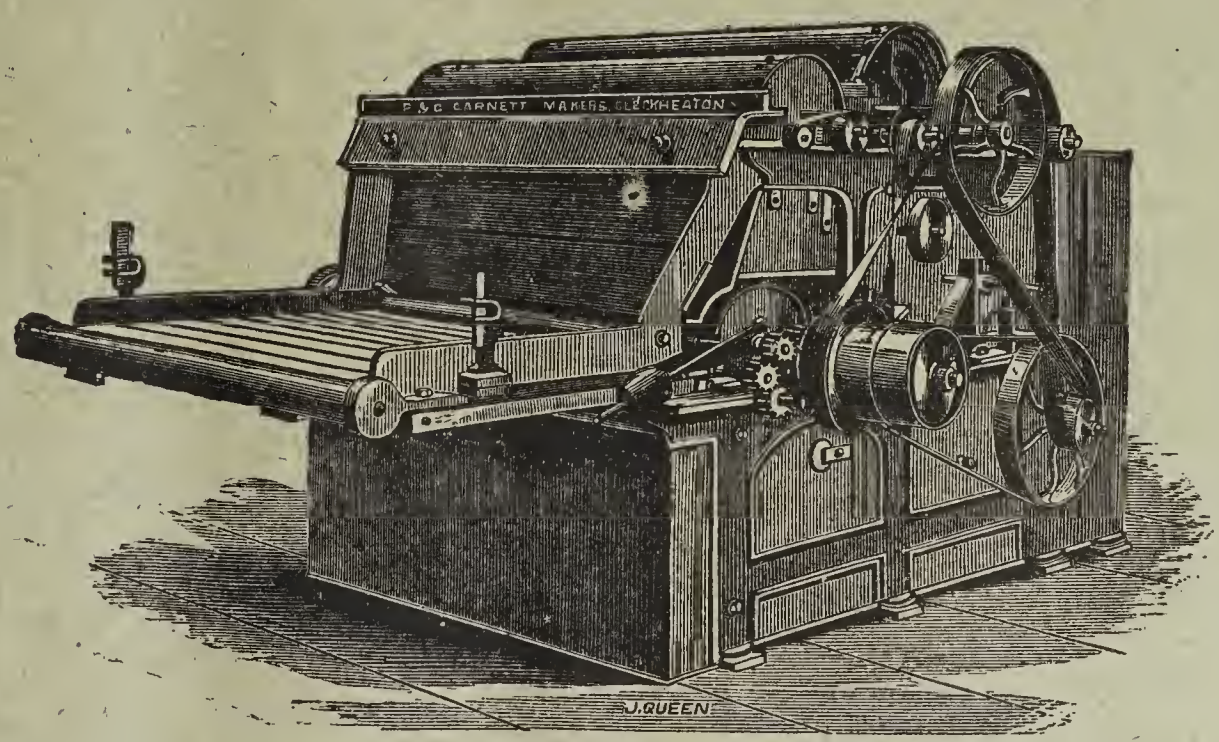
GARNETT'S PATENT COTTON GIN,

Unequalled for fast Seed Cotton.

NOUS CONSTRUISONS AUSSI

L'EGRENOIR BREVETÉ DE GARNETT

Sans rival pour la préparation des cotons á graine dure.



IMPROVED WOOL CLEANING AND BURRING MACHINE,

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and

TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

Stalybridge, May 9th, 1877.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than *twenty years*, and am very much pleased with the working of it. Its advantages are that it is much *cleaner* and *less costly* than leather or any other covering.

LA MACHINE PERFECTIONÉE À NETTOYER ET ÉCHARDONNER LES LAINES,

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construison aussi

LES CARDES MÉTALLIQUES BREVETÉES DE GARNETT,

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée

LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

Stalybridge, 9 Mai, 1877.

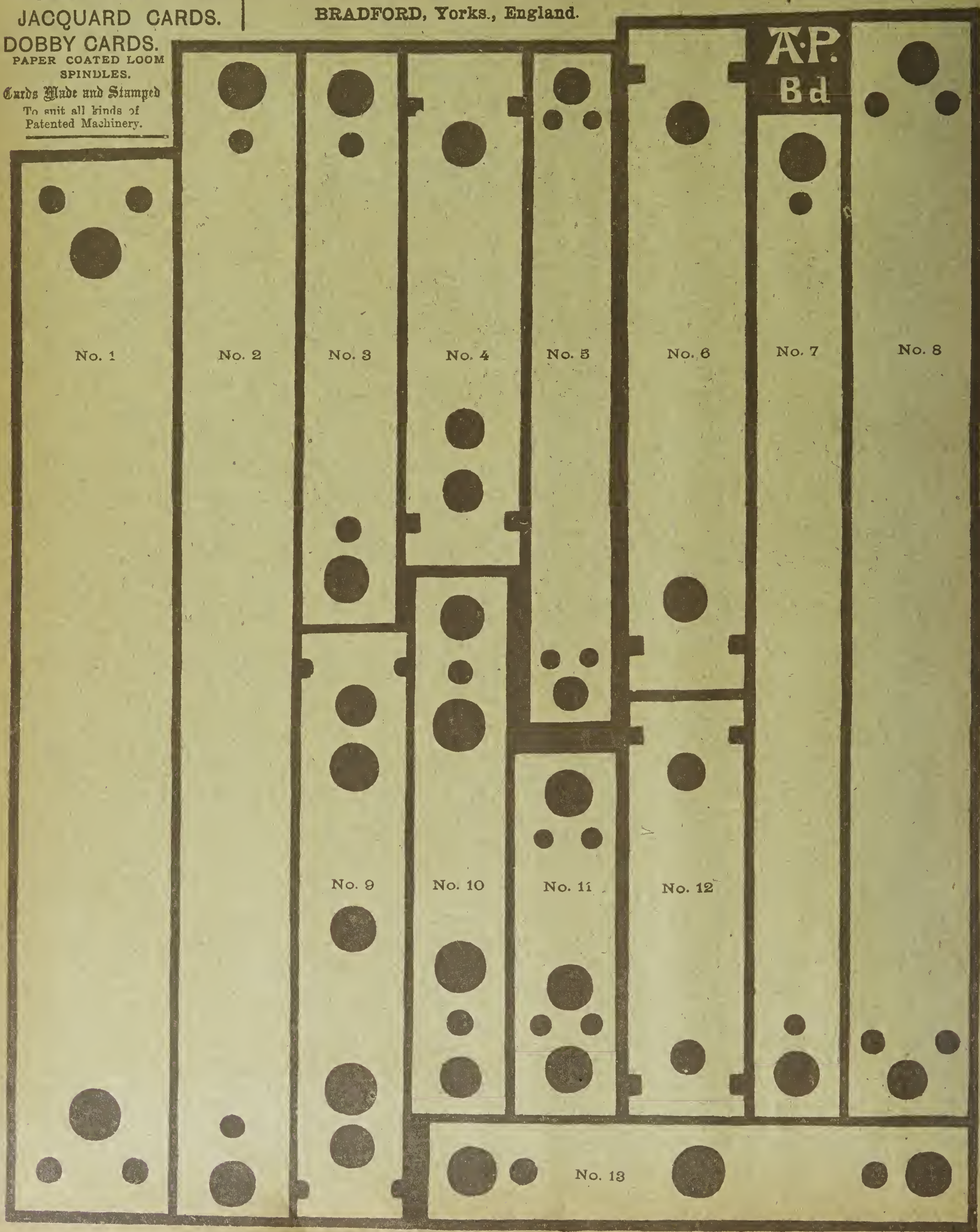
En réponse à votre lettre du 7 ct. j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

Manufacturer of
HARD BLUE
CIRCULAR BOX CARDS.
Hodgson's Shedding Motion Cards.
JACQUARD CARDS.
DOBBY CARDS.
PAPER COATED LOOM SPINDLES.
Cards Made and Stamped
To suit all kinds of Patented Machinery.

THE WEAVING CARD MANUFACTORY.
ANTHONY PYRAH,
ST. THOMAS' PAPER WORKS,
ASHTON STREET, CROPPER LANE, OFF THORNTON ROAD,
BRADFORD, Yorks., England.

Cards Cut Plain or Stamped, with Peg and Lace Holes as below, without extra charge.
Card Board supplied in Sheets to any size or gauge.



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R. LORD.

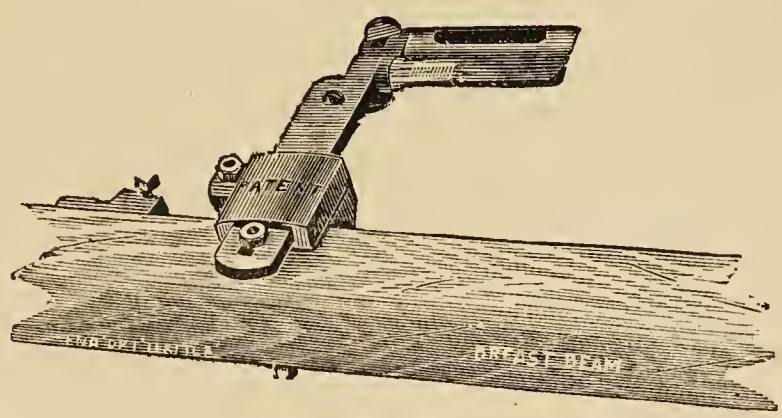
The Bradford Technical School.

After some months of elaborate preparation for the visit of H.R.H. the Prince of Wales and H.R H. the Princess of Wales to Bradford, the Technical School and Exhibition in that town were opened by their Royal Highnesses on the 23rd ult. Our space is too limited to give a description of the opening ceremony and of the hearty welcome given by some hundreds of thousands of loyal subjects (of Her Majesty the Queen) who had congregated from the different large towns and villages in Yorkshire, Lancashire and the adjacent counties. The very flattering reception given must have been in the highest degree gratifying to the heir to the throne and his royal spouse. The project for building the Technical School, which, we would say for completeness, now stands second to none in the kingdom, was first mooted in 1878, owing to the then existing arrangements at the Mechanics' Institute, where the work was carried on, being inadequate to the requirements of the large number of students in attendance. In October of the above year at a meeting at the Town Hall under the presidency of the Mayor, the scheme was thoroughly discussed and a committee formed to carry out the suggestions made, and before the meeting concluded no less a sum than £12,000 had been promised towards defraying the cost of the undertaking; this sum has since that time been increased to more than £25,000. The school is in the Italian style of architecture and one of the principal features of the design is a tower which rises in the centre of the principal front, to a height of 120 feet. The building contains a spacious Reading Room and Library; Public Hall capable of seating 800 persons; Lecture Hall for the use of Art Classes; an Industrial Museum; a series of rooms for the teaching of Spinning, Hand Loom and Power Loom Weaving, &c.; a Chemical Laboratory; a room specially adapted for teaching practical Dyeing; and all necessary offices for the despatch of official business. It is to be hoped that with such resources at their command, the artisans of Bradford, who may wish to excel in the different branches connected with the manufacture of textile fabrics, will take advantage of the opportunity afforded them of perfecting themselves in their work. The Fine Art and Industrial Exhibition in connection with the School will remain open until the end of October, and soon after it is closed the building will be occupied by the students of the School. Amongst the exhibitors we note the following:—

Messrs. JOHN INGHAM & SONS, CROFT HEAD WORKS, THORNTON, near BRADFORD, one of the oldest shuttle manufacturing firms in the kingdom, have put together a collection of shuttles, pickers, springs, pikes, and pots, &c., for spinning and weaving, which reflects great credit on the firm. Both in point of good material, and first-class workmanship, they have succeeded admirably in placing before the visitors a really splendid assortment of the above mentioned articles. Every kind of shuttle now in actual use finds its counterpart in the case, which contains no fewer than eighty specimens. An enumeration of the contents of the complete list would occupy too much of our space, especially if the purposes for which the shuttles are adapted, were stated. For weaving in different kinds of woollen looms, such as Hutchinson, Hollingworth and Co.'s; Pearson and Spurr's; Lee and Crabtree's; and Schofield and Kirk's; there are 16 specimens, excluding one light and one heavy shuttle for cops; the latter one having a spring drag. There are 18 specimens, including 9 different kinds for plain box looms, adapted for the weaving of Japanese, Lyons, Crefeld and other silks and silk velvets; and also 3 for pattern weaving, &c. There are 2 for swivel weaving, and 2 with fish cut inside for cop weaving without shuttle pegs. For carpet work, there are numerous examples, including Brussels, Scotch, &c., both large and small, and one large flax shuttle for cops. For the worsted coating trade there are several specimens for different sizes of bobbins. Shuttles for plain and fancy dress goods, table covers, window hangings, damasks, reps, moreens, lastings, and linen goods are all represented. Clapham's patent double bobbin shuttle finds a place and also another similar shuttle for weaving two colours of yarn together. There is also a plain one for French tubes. In addition to the above there are 19 different kinds of shuttle pegs for weaving spools, pirns, cops and tubes; and there are all kinds of fittings for woollen shuttles, stocks, bowls, &c. The list of pickers is likewise a long one, it includes Pearson and Spurrs' patent woollen picker, and Hutchinson, Hollingworth and Co.'s., drop box picker—5 different kinds of plain and drop box for woollen, 8 kinds for worsted coating weaving, numerous examples for linen, flax, cotton, &c.—6 different leather pickers, and 2 buffalo for under pick looms. There is also a specimen of Almond's patent picker. It may be mentioned that the larger shuttles are made of crabtree, beech, persimon wood, cornell wood, and the small ones of boxwood. They are all made on the most approved principle, and with all the latest improvements. They vary in size, from the large and massive cloth shuttle, twenty inches long, to the small ribbon one, not more than six inches long. We may mention that the case is surmounted by a monster shuttle, six feet long, made specially to be placed on one of the triumphal arches, during the recent visit of the Prince and Princess of Wales to Bradford.

Mr. GEORGE HODGSON, THORNTON ROAD, BRADFORD, exhibits a number of power looms for weaving various descriptions of cloth, such as orleans, alpacas, mohairs, reps, coatings, and other similar fabrics. Amongst the number is a three-quarter fast reed, worsted coating loom, having a sixteen-shaft shedding motion, which is patented, and which occupies a very limited space and requires no gantry, being securely fixed on the top rail. It is worked by a two winged orlean tappet on the low shaft, and the card cylinder is moved by a vertical eccentric motion from the top shaft. Another loom is a four-quarter pick-and-pick with a circular box working independently on each end, which allows of a great variety of colours being used. It is fitted with various appliances to weave ordinary and complex patterns. There is also a loom adapted to weaving mohairs, alpacas, &c. It can be run to 320 picks per minute. In the weaving of twills it can be fitted up to eight shafts. There are also three or four other looms, all of which are specially adapted to weave particular kinds of fabrics. This exhibit should be taken advantage of by makers of the fabrics specified, more especially, as the exhibitor, as a maker of this class of looms, has already made his mark as a machinist in all parts of the textile world.

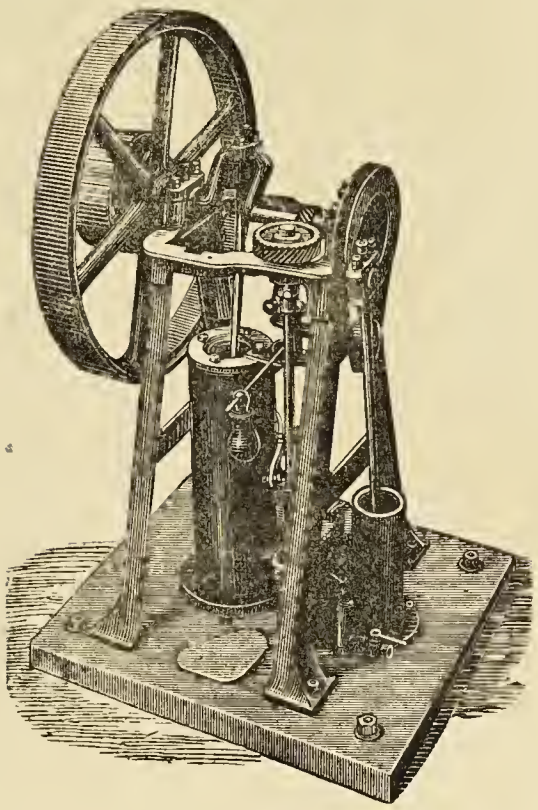
Mr. J. PARKINSON, CHESTER STREET, BRADFORD, Machine and Temple maker, has prepared a very artistic display of more than 50 temples of various kinds (one of which we illustrate below), which is, without exaggeration, an ornament to that part of the exhibition in which it is placed. The merit of the examples in this exhibit cannot, we think, fail to result in an increase of business to the exhibitor. The specimens consist of star, roller, Swiss and segment temples, with patented improvements, for woollen, cotton, linen, worsted, silk, velvets, carpets, fustians, &c., and also of different descriptions of stars, rings, and other parts for use in different classes of goods. Perhaps the temple most noticeable is one recently patented by Mr. Parkinson, for the weaving of "slack edges" and very heavy goods, and by which the resistance or friction of the fabric in the temple is overcome, and the side ends of the warp are kept tight during the "heat up," and the backward movement of the fabric in the temple is prevented. Great inconvenience and annoyance are often caused to manufacturers of heavy woollen goods by the tendency that the selvedges of certain classes of fabrics have to crimp almost like a frill in the weaving of them. But by the use of this invention the inconvenience may be entirely obviated. By a simple arrangement the temple can be adjusted in relation to the reed, with great facility, and extended or contracted laterally to suit the varying width of fabrics woven. A provision which is called the shuttle-trap escapement is made for preventing damage to the temple, shuttle, or reed, in what is known as a "shuttle-trap," whereby the temple, when struck by the shuttle, will slide back, and no injury will be done to the reed, shuttle, or temple, and the weaver can readily replace the temple in working position without the aid of any person. The invention allows of movement being given to the



temple by the piece, in such a manner as that it shall vibrate with the piece, and do its work nearer to the "shed" or "reed" than is the case with rigid temples. In the manufacture of heavy goods this movement is most desirable. In addition to the above there are in the case temples of special makes for the weaving of both light and heavy classes of soft Bradford goods, which should command the attention of manufacturers of such classes of fabrics. Many of the temples may be seen at work in the exhibition on the looms exhibited by Messrs. G. Sowden & Sons; Messrs. Briggs Priestley & Co.; Messrs. Leeming & Sons, and other firms. In addition to exhibiting temples, Mr. Parkinson shews his positive motion, double-lift shedding motion or dobby, which may be seen working on Messrs. Briggs Priestley & Co.'s loom. The advantages of this machine may be summarised as follows:—All its motions are positive, and in consequence the necessity of springs as undergearing is obviated. It has a "centre lift," and the back healds are lifted more than the front ones, securing uniformity of shed, and preventing undue straining of the warp. It is worked from the crank shaft, and only one set of pattern cards is used, and the setting of the pattern is rendered easy. For heavy broad looms a dwell is provided so as to cause the shed to remain open a longer time to accommodate a large shuttle with slow travel. A reversing motion is applied to facilitate finding the "pick." There is an absence of small complicated parts in the construction, and being very simple need give little trouble in working.

Mr. J. APPLEYARD, REED AND HEALD MAKER, CENTRAL WORKS, THORNTON ROAD, BRADFORD, shows a number of reeds and healds of various kinds for the weaving of all kinds of silk, cotton, woollen, worsted, and other goods; carpets, sail-cloth, wire cloth, &c. The reeds are fair specimens of good workmanship, but it would have been much to the advantage of the exhibitor to have shown a greater length of reed than is given in the samples in the case. It has however been explained to us that owing to some mistake the requisite length of space to allow of a longer length, was not allotted to the exhibitor until too late to prepare a proper display. The healds, &c., are of uniformly good material and workmanship and should command the notice of manufacturers.

MESSRS. S. CLAYTON & CO., PARADISE STREET, CROPPER LANE, THORNTON ROAD BRADFORD, exhibit their patent "Excelsior" Gas Engine. This engine, now being brought before the public by the patentee (Mr. S. Clayton), is the result of much labour on the part of the inventor, but after devoting his time to the improving of various parts of the working and action of his patents, now brings before our notice what he believes to be a simple, efficient, and cheap motor. The principle of the engine may be stated as follows:—It has two cylinders—one the mixing, the other the working cylinder. The mixing cylinder is for the purpose of drawing in a thoroughly diluted mixture of air and gas on the piston's ascent, and on the descent of the piston it is forced into the working cylinder, still more thoroughly mixing it, as by so doing it has been found to be the most effectual way of getting a proper lighting mixture. On the descent of the working piston the charge is compressed previous to being ignited. The makers of this engine claim that one of the greatest improvements in gas engines is the abolition of the slide valve. it being held that the slide valve of a gas engine of the best construction consumed about 10 per cent. of the actual power developed by the engine, Thus in this engine a small portion of the charge intended to work the engine is allowed to pass a small regulating screw into a chamber where it is ignited by a new process—



"*Watson's Patent Igniter*," *perfected by Mr. Clayton*,—and which is an entire novelty in gas engines, and perhaps the most effectual igniter yet introduced, as it dispenses with valves altogether; no expensive surface is required; no liability of blowing through, as in the case of all other gas engines. At the proper time it is trapped in the chamber by the descent of an ordinary mushroom valve, and then passed into the charge of air and gas, igniting the same and propelling the engine. It is claimed that the arrangement of this engine is very simple and is not liable to get out of order, requiring but little attention. The proprietor states that these engines are made horizontal as well as vertical, and that those in use have given much satisfaction; the sizes in which they are made—adapted for small industries—and their prices combined, render them a useful motor for small works.

MESSRS. PLATT BROS. & CO., LIMITED, OLDHAM, have shown their usual enterprise by exhibiting machinery of a high-class character, and in such a style of workmanship as becomes the largest machine-making firm in the world. Their exhibit consists of worsted machinery for combing, roving, spinning, and weaving; there is also a complete set of machines for washing, preparing, spinning, &c, which to the manufacturers of botany and other fine wools, and also of Bradford soft goods, ought to be of the the greatest interest in these days of French competition. To give a full description of this firm's exhibit would occupy some pages of our Journal, we shall therefore have to satisfy ourselves by giving a list of the machines. There is a backwashing machine with a screw gill balling machine in combination, fitted with the necessary bowls for washing, immersing rollers, squeezing rollers, and copper drying cylinders. The balling machine has one head of two deliveries, with front and back rollers fluted, and is supplied with gill screws for twelve fallers-up, &c. The second machine is a combined screw-gill lap machine, with one head of one delivery, to be used for making laps of uniform thickness and length for the combing machine which Messrs. Platt Bros. & Co. exhibit. The front and back rollers are fluted and fitted with gill screws for twelve fallers-up. The next machine is a Little and Eastwood's patent comb, specially manufactured for the combing of fine wools, such as Australian, Cape, River Plate, and is adapted particularly for short stapled wools. The fourth machine is a screw gill balling machine, having one head of two deliveries, with screw gills for one set of fallers. There is a bobbin roving machine for working on the French system which should interest visitors, and also a self-acting worsted mule of 220 spindles, which in a room suited to the ordinary mule, could be lengthened to 700 spindles. The next machine is a loom for weaving coatings and fancy goods, which has three shuttle spaces on each side, and has many of the latest improvements. Messrs. Crossley Bros. have laid down an eight-horse power gas engine, by which the whole of the above machinery is driven.

MR. CHARLES HAIGH, CENTRAL WORKS, THORNTON ROAD, BRADFORD, makes a very comprehensive display of brass and gun-metal taps, valves, water-guages, fire brigade fittings and general work of interest to millowners and others, and also shows some good specimens of wrought iron solid and split drums. Amongst the brass work are some capital examples of valves, gauges, &c., the whole of which have been manufactured at the above works from the moulding of the castings to the finishing work. The wrought iron split and solid drums show that they have been made by thoroughly practical hands; they are in varying sizes from 24 inches to 6 feet in diameter and are made with single and double arms respectively and have cast iron bosses. They combine lightness with strength. In practical use they cannot fail to work with an evenness and smoothness owing to their true balance—the vibration on the shaft is reduced to a minimum and therefore the loss of power by friction will be very slight. Mr. Haigh manufactures the drums in various sizes from 12 inches to 24 feet diameter, and if the price list issued and the guarantee of good material and workmanship which is given be any criterion, the business resulting from this exhibit ought to be considerable.

MR. RICHARD COCKSHOTT, 1, BACK CHAPEL STREET, LEEDS ROAD, BRADFORD, exhibits a tastefully arranged case of tops, yarns, and pieces, in the preparation of which his Gallipoli wool oil cream has been used. In the case is a sample of the oil, which is specially adapted for the combing and carding of wools, &c. The tops in the case were combed in 1879 and 1880, and were made from Yorkshire wools, 3s quality, and cross-breds, Lincoln wethers, botany and mohair. Although they were combed two years and eighteen months ago respectively, they have still the bright and fresh appearance of newly-made tops. The yarns and pieces were manufactured at the same time, and from similar wools and mohairs as the tops, and have the same bright and clean appearance The coloured and stoved yarns had the oil used to them on the second combing. Mr. Cockshott, in his circular, states fully what advantages are gained by the use of this oil. It produces a better colour inthe top, and gives a soft and full yarn, which makes a fuller cloth. The colours produced in dyed and stoved yarns are brighter than in wools combed with the ordinary oil, and by its use they are rendered firmer in spinning. In the double combing of dyed and stoved wools a great saving is effected—from 25 per cent. upwards. It is incombustable and unlike many oils, it does not reece in the wools. In a notice, in a former issue, we fully explained the merits of the cream, and we can now fully indorse what, at that time, we laid before our readers, that manufacturers of tops, yarns, and pieces have only to give the cream a trial in order to fully appreciate its value.

MR. ANTHONY PYRAH, ST. THOMAS'S PAPER WORKS, ASHTON STREET, CROPPER LANE, THORNTON ROAD, BRADFORD, shows a great variety of hard blue and other cards, including circular box, jacquard, dobby, and Hodgson's shedding-motion cards. That our readers may form an idea of the different sizes, &c., of the cards (in the case) that are made at the above manufactory, we give full page illustration opposite the first design in the present number. This illustration, of course, cannot convey the faintest idea of the actual strength of the material from which the cards are made, nor yet of the wear and tear through which they are capable of passing in practical use. Manufacturers, who may visit the exhibition, would do well to call at the works and see the process of making and cutting these cards; the latter part of the work is done by a patent machine, which cuts them at the rate of 10,000 an hour in each machine. We think it would have been greatly to the advantage of Mr. Pyrah, as well as to that of the visitors generally, if he had placed one each of the cutting and stamping machines in the exhibition, and there have carried on the work. The looms at work in the exhibition belonging to the following exhibitors have been fitted up with cards made at St. Thomas's Works, viz.:—Mr. G. Hodgson, Messrs. D. Sowden & Sons, Messrs. Hacking & Co., Messrs Frerichs & Co., Messrs. Hattersley & Sons, Mr. Flather, and Mr. Ashenhurst. In addition to the cards, Mr. Pyrah shows some paper coated loom spindles of a good make.

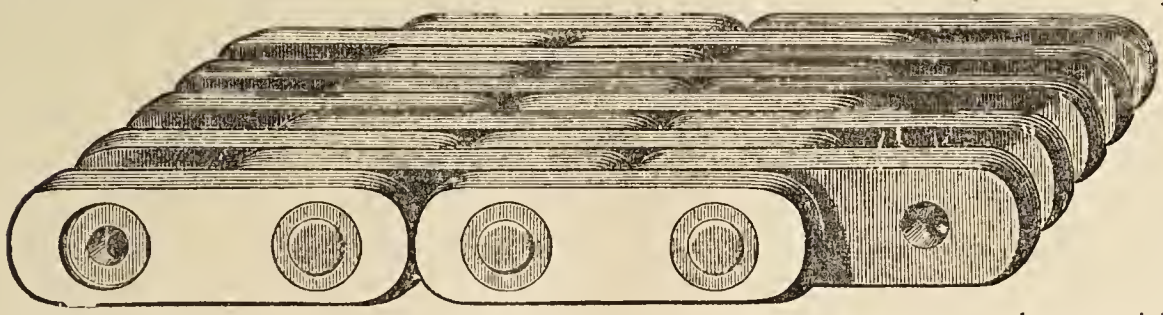
MESSRS. WM LAYCOCK & SONS, QUEEN STREET LEATHER WORKS, and 35, LOW STREET, KEIGHLEY, make a display of leather belting, &c., of various kinds which should be of great interest to spinners, manufacturers, machinists, &c. Many years of practical experience in this department of manufacture has enabled them to produce an article which on account of its solid and genuine material and good work, must command the attention of a large number of users of this class of goods. To fully explain the merits and points of each article would take up more space than we can possibly spare, but we with pleasure draw attention to such as demand special mention. Perhaps the palm should be given to a fine specimen of a double main driving belt (one amongst many) which is 37½ inches wide, and made in one solid breadth, the two pieces being cemented together and afterwards pegged with wooden pegs. This is considered by this firm to be the very best method of manufacturing a double belt; for being in one solid breadth it is infinitely stronger than if made in strips, it is more pliable and has less tendency to slip on the pulleys when pegged in the above manner, than when worked with copper wire, There are several specimens of single belting made from English grown hides, some of which are of an extraordinary thickness, and are in widths to suit different breadths of pulleys. The whole of the belts (both the main driving and single) are tanned with the best English oak bark. In roller hides and combing leathers, some really excellent samples are shown which for good workmanship, we should say cannot be excelled. The latter, we understand, were first made to imitate the French leathers but judging by the appearance, they are quite equal to the best French make, and they to our thinking surpass them. We may add that the whole of the belts required to drive the machinery exhibited by Messrs. Platts Bros. and Co. (Ld),; Messrs. G. Hattersley and Sons; Mr. George Hodgson, and several other large firms, have been supplied by Messsrs Laycock and Sons, and are guaranteed of their own manufacture. A single belt which drives the machinery of Messrs. Platt Bros. and Co, deserves special notice. It drives direct from the engine, and is in thickness and growth, probably, one of the finest specimens of English belting ever exhibited. We commend this exhibit as being specially worthy of personal inspection.

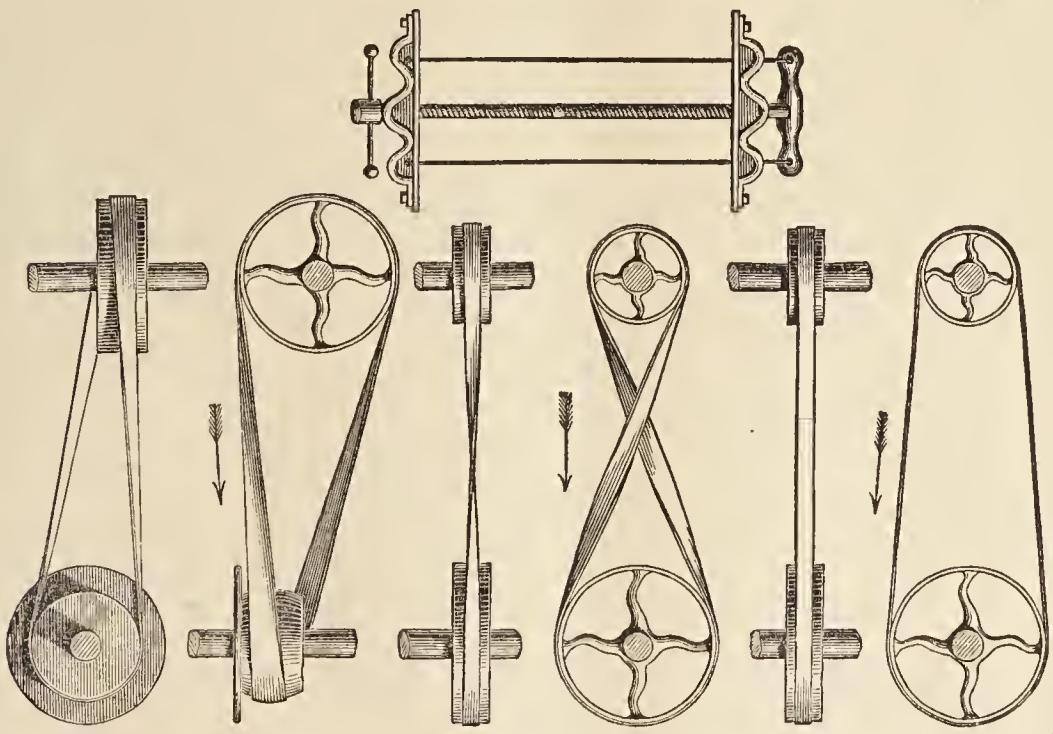
MESSRS PARR & Co., 24, NESFIELD STREET, MANNINGHAM LANE, BRADFORD, have placed two glass jars containing samples of their vegetable oil cream used in the carding and combing of wools, &c., in the exhibition. The result would have been much more satisfactory to the exhibitors had they placed before those interested in the use of oil creams a few samples of wools, tops, yarns and pieces, in the manufacture of which the oil cream had been used. We think Messrs. Parr and Co. have hardly done themselves justice, but owing to the space they occupy being given them at the last moment, they unfor-

tunately were unable to prepare an elaborate display. Perhaps it would be as well to put before our readers the capabilities of the cream. The advantages claimed to be gained from its use are its efficiency in cleansing the wool in the process of carding, combing, &c. It gives a fuller and richer feeling to the wool, which is afterwards more easily and thoroughly washed; and in the dyeing process the colours come out much brighter, than when prepared by the ordinary Gallipoli oils. Perhaps the chief advantage lies in its economy, the saving in oil is guaranteed to exceed 25 per cent. in addition to obtaining a fuller yarn and consequently an increased width of piece in the manufactured material. Many oils, especially in hot weather have an objectionable smell; our experience of this cream is that the odour is anything but disagreeable, and one of its distinguishing properties is the non-liability to reece; even in the hottest weather, it remains sweet. Manufacturers, &c. will have the opportunity of testing the latter fact during the hottest part of the year. We had an opportunity of proving the value of the cream some time ago, and as far as our experiments were carried the result was very satisfactory.

Mr. GEORGE CROSSLEY, ALBION FOUNDRY, CLECKHEATON, YORKSHIRE, who is a manufacturer of machinery for drawing iron, steel, brass, copper, silver and gold wire; hackle pin, wire cutting and straightening machines; shafting, gearing, engines, &c. and various descriptions of ironwork, shows some capital specimens of wrought iron pulleys, both split and solid, those shown vary in size from 2 feet to 6 feet in diameter. In the manufacture of these pulleys, the best material it is possible to procure is used. The pulleys manufactured by them are capable of transmitting 600 horse power, and are very light and strong. The arms are not cast into the boss, but are so secured and fitted that it is almost an impossibility for them to work loose. They are readily placed upon the shafting and cannot easily be broken. Mr. Crossley makes the pulleys of various sizes from 14 inches to 30 feet, with any breadth of face that may be required; and with either single or double arms. These pulleys are quiet in use, true in balance, and as they can be driven at a very great speed without danger, they will therefore be found to be most valuable for driving machinery.

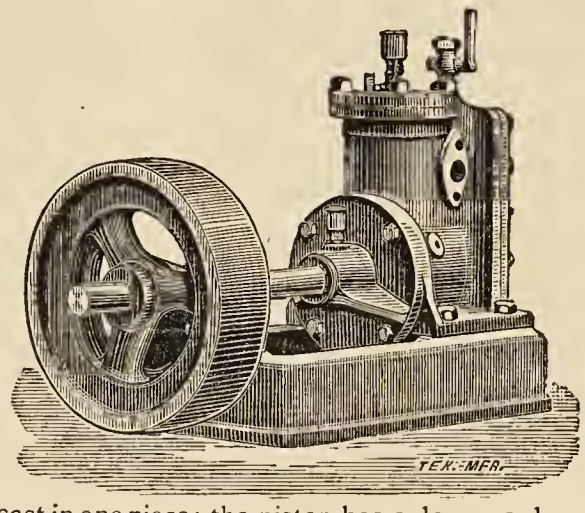
Messrs. W. OLDFIELD & WALTON, COALHILL STREET, CAMLACHIE, and 38, CHARLOTTE STREET, GLASGOW, put before the notice of users of belting their Patent Leather Link Belting, which is applicable to machinery of all descriptions. The irregularities often found upon the ordinary leather beltings, caused by a want of uniformity in thickness, together with the irregularities of surface arising from inefficient splicing and rivetting, cause a great loss of power, and consequently a loss of money to the user, but in the Oldfield Patent Leather Link Belting, these irregularies on the surface do not occur; there is an entire absence of rivets on the surface, as they are all fixed on the sides of the belt, thus the whole breadth of the belt is left entirely free to work on and grip the surface of the pulley. A perfect smoothness of working is ensured from this cause, and therefore an increased power is gained. In addition to this the flexibility of the belting is in no manner interfered with,





owing to its mode of construction; and as the bearing is thrown on the edge of the leather, the belting is rendered much more durable than the ordinary kind. This belting has one advantage—it can be reversed if required, as it works smoothily and satisfactorily on either side. It works with equal facility on either large or small pulleys, and the length can be altered easily. The annexed illustrations will give an idea of the belting and of its adaptibility to driving machinery purposes.

Mr. ALFRED YATES, BLACKWALL WORKS, HALIFAX, exhibits the unique steam engine—the "Velomotor." It is a matter of astonishment to us that a motor of such Liliputian dimensions should be capable of going through such an amount of work as it does. The patentee has studied three important principles in the designing of the engine—economy in the first cost, economy in the space occupied, and economy in the use of steam. These principles are certainly attained, as the price is undoubtedly less than that of any other well finished motor in the market. It occupies less space than the majority of motors, and requires much less steam. In noticing the engine, it will perhaps only be necessary to repeat the description we gave of it some months ago. "Referring to annexed illustration, it will be seen that the cylinder is placed ver-



tically, and is cast in one piece; the piston has a downward movement, with steam on the upper side only (hence its economy), the casting having a swelled chamber at its base, in which the steel crank—which is balanced—revolves, the crank shaft running in bearings bushed with phosphor bronze. The piston is made deeper than is generally the case, as the connecting rod, being coupled to it, it has to act as cross-head also, the sides of the cylinder acting as guides. The steam-chest is cast with the cylinder. The valve is the ordinary flat slide, but for single ports only. the feed port being at the top of the valve chest; the passage is short and nearly straight, the action being direct. The valve is set to cut off at one half of the stroke, and to close the exhaust early. By this very important action silence in working is ensured, even at a speed which in other engines would be fatal. The working parts of the motor being within the cylinder, and the steam being on the top of the piston only, there are no stuffing boxes required, hence the engine will run continuously without attention, beyond lubrication; and owing to the great speed at which they work (and this silently) there is no necessity for a great number of counter shaft straps, pulleys, wheels, &c., to get speed up. In most cases the machinery can be driven direct, the engine in many cases being less in price than the necessary gearing and connections of other methods. The motors are guaranteed to be of first-class workmanship, and the materials of the finest quality, the shafts being of steel and the bearings of phosphor bronze. They are also guaranteed to drive machinery equal to any ordinary engine of the same size, with less expenditure of steam. The space occupied by a 3 h. p. motor is only 3 ft. 6 in. by 1 ft. 8 in. In sizes above 5 h. p.; they are constructed with two or more cylinders, which of course makes a still more superior engine, and ensures very steady driving powers." To give our readers, who may not be able to see the engine and to judge of the driving power of this motor, we may add that one of a 3 h. p. is fixed to run Messrs. P. & C. Garnett's three swift waste opener. An idea of the power required may be gleaned by looking at illustration of a two swift waste opener opposite page 6.

Mr. WILLIAM DAVENPORT, CRAMPTON STREET, LITTLE HORTON LANE, BRADFORD, occupies a space with a newly improved self-acting reed machine. It is very simple in its construction. The reciprocating wheels have machine-cut teeth. The reed carriage is a sliding bar of wrought iron, resting the whole length on both sides of the gauntry, thereby giving the reed a firmness and solidity, rendering it unnecessary to have any rope or weight attached. This arrangement enables the machine to make a reed with a thicker and stronger band. The "driving barrels" have a quick return motion, which prevents the band from lapping over them, thus securing an equal and uniform tension, and consequently an evenness in the reeds. The machine exhibited is a speciality for reeds for silk and other fine goods. The whole of the working parts are most accurately and carefully fitted, and the mechanism has been got up in such a style as reflects the greatest credit on the artisans who have had the work in hand. In addition to manufacturing the above described machine, Mr. Davenport makes improved mail heald knitting machines, wire rolling and polishing machines, self-acting tools, &c., some examples of which we should have much liked to have seen exhibited.

Messrs. JOHN CROSSLEY & SONS, LIMITED, OF DEAN CLOUGH MILLS, HALIFAX, make a good show of carpets. This class of fabrics is by no means so extensively represented as might have been expected. There are but two exhibits of them in the whole building. Seven specimens of carpets, several rugs and sofa carpets, etc., being from the above firm; whilst the other exhibit consists of only a single specimen. This may be a source of disappointment to many of the visitors to the exhibition, yet one fact will be apparent to all specially interested in carpets, viz.:—If the exhibits be not numerous, they are even more than could have been anticipated in point of beauty, elegance and novelty of pattern, combined with effective

harmony of colour and excellence of quality. The seven carpets shown by Messrs. Crossley and Sons are all made up into squares with borders complete, and are in either Tourney velvet or Wilton; the best wools having been used in their manufacture. The exhibit comprises a Japanese drawing room carpet, with the ground of pale blue, with pattern worked in yellow olives; a Jacobin design chiefly in terra-cotta shades; a very quaint specimen in Queen Anne style for drawing room; an old English carpet with pattern of Egyptian lily treated in a bold and vigorous manner; a couple of Indian carpets of excellent design and good colouring and an æsthetic specimen with plain ground of peacock blue and border of dead gold. It is perhaps worthy of special mention that the body of this carpet, which is 4 yards wide has been woven in one piece, Messrs. Crossley and Sons having recently erected a power loom capable of turning out carpets 16 quarters wide.

Messrs. TUBERVILLE, SMITH & Co., GREAT MARLBOROUGH STREET, LONDON, W., exhibit an Axminster carpet of an exquisite pattern, designed by the late Sir Digby Wyatt. We could have wished to see such a charming piece of work exhibited in a better position, two or three show cases, which are placed immediately in front of it, making it difficult to see more than one portion of the pattern at one time.

The Spanish Tariff.

The Madrid *Revista Financiera* publishes the following table, which shows the duties at present paid on some important articles of import, and the duties per cent they will have to pay after the application of the first, second, and third reductions provided for under Article 5 of the new Spanish tariff:—

Articles.	Duties at present charged.	Idem after the first reduction on 1st July, 1882.	Idem after the second reduction on (?)	Idem after the third reduction on July 1st, 1882.
	Per cent.	Per cent.	Per cent.	Per cent.
Class 2.—Group 2.—Iron and steel				
Pig iron and old iron	25	21-67	18-34	15
Iron pipes of all classes	25	21-67	18-34	15
Manufactured iron (ordinary)	30	25	20	15
Iron in fine manufactures, polished, faced with procelain, or ornamented with other metals	25	21-67	18-34	15
Iron and steel rails	30	25	20	15
Iron plates from 6 milimetres inclusive and above	30	25	20	15
Iron in bars of any shape; in plates up to 6 milimetres, axles, hoops. plates, and carriage springs	30	25	20	15
Class 4.—Group 2.—Threads, (yarns)				
Cotton, spun and twisted, 1 or 2 threads, unbleached, white, or coloured. up to No. 35 inclusive	35	28·34	21-67	15
Ditto from No. 36 above	30	25	20	15
Ditto, 3 threads or more, unbleached, white, or coloured	30	25	20	15
Group 3.—Textiles.				
Textiles — close, plain, unbleached, white, or coloured in pieces or handkerchiefs, up to 25 threads inclusive, counted in the weft, and within a square of 6 milimetres in the warp	35	28-34	21-67	15
Ditto, 26 threads and above	30	25	20	15
Ditto, printed, crossed, worked in the loom up to 25 threads in the weft and warp	35	28-34	21-67	15
Ditto, 26 threads and above	30	25	20	15
Ditto, transparent—such as muslins, cambrics, lawns, book-muslins, and gauze	30	25	20	15
Quilting and jean	30	25	20	15
Cotton velvet, plush, and other double cloth for wearing apparel	—	25	20	15

In reply to a resolution passed by the United States Senate, Mr. Joseph Nimmo, Chief of the Bureau of Statistics, has handed in a report embodying the results of an elaborate research into the subject of wages in the United States. In the manufacture of iron it is shown that a good workman can earn either by the day or ton nearly, if not quite, three times as much as in England. In the manufacture of thread the wages in the United States exceed those in England by an average of 62 per cent. Tanners earn 13 1-3 per cent. more than in England, 54½ per cent. more than in France, and 57½ per cent. more than in Germany, and in the case of curriers the difference is nearly twice as great. No statistics of the woollen manufacture could be obtained. According to Mr. William C. Wyckoff, the wages in the silk manufacture are twice greater than in England, three times greater than in France and Germany, and four times greater than in Italy. Statistics are also supplied, so far as obtainable, of the comparative cost of living in the different countries; but according to the report, all considerations being duly weighed, the balance is greatly in favour of the United States.

Book Notice.

The Manual of Colours and Dye Wares.—By J. W. Slater. *Crosby Lockwood and Co., London.*

This volume, which is a revised and enlarged edition of a manual on colours and dye wares, contains, in the form of an encyclopaedia, a mass of practical information relating to chemical products and natural wares used in dyeing and printing and the accessory arts—their properties, their applications, with the means of ascertaining their respective values and of detecting the impurities which may be present. We have not had an opportunity of perusing the first edition of the work, and cannot therefore judge of the improvements that the author may have made in this second and enlarged edition, nevertheless we are of opinion that the volume which now lies before us, will be highly appreciated both by the technical student, who may with great advantage to himself, use it as a text book, and by the master dyer and printer who will find it of benefit in actual practice. The book gives a quantity of information respecting new colours of the existence of which we had not been aware, and moreover it gives particulars of colours sold by inventors and manufacturers under different names, but which are practically one and the same substance, and also of bodies chemically and practically distinct, but which are confounded under the same name. This work will prove of great value to users of these different products.

ODDS AND ENDS.

The Cotton Buying Company, which was established at Oldham to do away with the middlemen, seems to have been a success. A bonus and dividend of 7½ per cent. have just been declared.

* * * *

A commission of specialists has been sent to report on the possibility of cotton cultivation in the Caucasus. The subject has been much studied by Prince Dondukoff-Korsakoff, and an arrangement has been made with the occupiers of the Milis Steppe for 250,000 hectares on which the experiment of cotton planting is to be made.

* * * *

Mr. Josef Kristen has patented, in Germany, an apparatus for dyeing leather, &c., which consists of a wood plate, upon which the skin, &c., is spread. This plate is made to revolve, the colour solution being at the same time injected and sprinkled over the leather by means of a pump. The colour solution spreads equally over the leather whilst revolving, whilst the excess of colour is thrown towards the sides of a circular box by which the wooden plate is surrounded, and from thence falls into vessels in which it is collected for re-use.

* * * *

The Italian Government has lately published some statistics on the coal and iron production of Italy, which will be of interest at the present moment, in connection with the recent opening of the St. Gothard railway. The coal output of Italy, according to these tables, was in 1880, 139,000 tons, as against 58,770 in 1870, and 30,280 in 1860. The production of pig iron was in 1860, 25,576 tons, in 1870 it reached on 19,914, and in 1880 it had further declined to 17,336 tons.

* * * *

A St. Petersburg correspondent reports with regard to the new Russian tariff, of which so much has been said latterly, that it will come into operation on the 14th of July (Russian style). The advance in duties is general, bearing as it does upon nearly all kinds of imports, especially textiles, iron goods, and coals. Nothing very definite is known as yet with regard to the new duties on iron and coal, but it may reasonably be taken for granted that the new duties on textiles will include the elevation of the yarn tariff by 4½ to 7 roubles per pood, and for piece goods by 40 to 90 kop. per pood.

* * * *

A collection of objects illustrating the Scandinavian industrial arts has been sent over to the South Kensington Museum, and is now being exhibited there. They have been selected as characteristic of the Scandinavian style, in ancient and modern times. The collection includes richly decorated weapons and personal ornaments dating from the earliest period, as well as a series of examples of later date, down to the present time. The exhibition also contains a series of silver filagree ornaments belonging to the dress of the peasants in the Scandinavian countries and Iceland, skilfully carved coffrets, drinking cups, and other wood-work, and a rich collection of textiles and needlework.

* * * *

From Tunis we learn that the question of the esparto grass concession, which has excited some attention in England, has received a satisfactory solution. The Bey has signed a decree, defining the important rights ceded by him to M. Duplessis, in accordance with the views and with the express sanction of the International Financial Commission. M. Duplessis has associated with him in the working of the concession the well-known English firm of Edward Jordan Hough & Co., of London and North Shields; and under their auspices the British Esparto Supply Company has been founded. Operations will be at once commenced in the Buhedma district, where all disturbances have ceased, and which is to be connected eventually with the sea coast by a railway. Native labour is to be exclusively employed in the interior, and the terms offered are said to be acceptable to the Bedoui Arabs, who will largely share in the profits of the undertaking. There is reason to believe that the effectual opening up of the extensive but almost unknown Tunisian esparto-producing districts will materially tend to the development of the country The Baron d'Estournelles, who has negotiated the settlement of this difficult question, has endeavoured to balance fairly the French and English interests involved.

NOTICE TO ADVERTISERS.

Advertisements will be inserted at the following rates; (in all cases prepaid): *Twenty words, One Shilling; Sixpence* for each additional *Twelve words* or part of *Twelve*. The address being counted as part of the Advertisement.

Displayed Advertisements according to arrangement.

Mercantile Assistants, &c., Want Places.

BRUSSELS CARPET DESIGNER (Experienced) wants situation. Moderate salary. First class references. Address "Designer" *Journal of Fabrics* Office.

AN EXPERIENCED DESIGNER of Tapestry Fabrics is desirous of obtaining an engagement. Well up in either sketch or rule paper work. Can give good references. Address "G" *Journal of Fabrics* Office.

Manufactories, Works, &c.

TO LET or SELL, the very convenient MILL, known as Elmfield Mill, Bramley, near Leeds, with the counting-house, rag shed, 4 cottages, stable, and other buildings, reservoirs, and land thereto adjoining, lately in the occupation of Messrs. Hoyle and Harrison. The mill is situate near the Bramley Railway Station, is 3 storeys high, well supplied with water, and adapted either for a woollen, cotton, or worsted mill, or for the leather or shoe trade. Immediate possession.—Apply to David Newton, Auctioneer, Paddock Lodge, Bramley; or to Henry Snowdon, Solicitor, 13, East Parade, Leeds.

Miscellaneous.

TO EXPORTERS.—Mr. Edward Coward, of 2, Pekin Buildings, Liverpool, has considerably extended his Shipping Agency Business, and begs to inform Export Manufacturers in the Woollen Cloth, &c., districts, that he will be happy to conduct the shipment of any goods they send through Liverpool on his usual moderate terms, which may be had on application. Every facility for despatching cargo with rapidity and economy.

THE GAZETTE.

Adjudications of Bankruptcy.

Pearson Thomas, Wellington Street and Albion Street, Leeds, woollen and worsted manufacturer.
Taylor Thomas, Boyer Street, Derby, elastic web manufacturer.
Walsh Yates, Providence Mill, within Church, cotton manufacturer.

Liquidations by Arrangement or Composition.

Crossley William and Alfred Crossley, Portsmouth, Todmorden, Lancashire, cotton manufacturers.
Edmundson Richard, Macdonald's Lane, Corporation Street, Manchester, yarn and cloth agent and merchant.
Priestley Fred, Gatebottom, Todmorden, Yorks., warp sizer.
Blakelock Robert, Benjamin Blakelock, and Henry Blakelock, trading as John Blakelock and Sons, Liversedge, Yorks, flannel manufacturers.
Brearley Walter, Rooley Lane and Industry Mill, Dudley Hill and Swaine Street, Bradford, commission manufacturer.
Greenwood Robert, Arthur Greenwood, and John William Greenwood, trading as John Greenwood and Sons, Dewsbury, woollen manufacturers.
Hopwood John, Oswaldtwistle, Lancashire, power loom cloth manufacturer.
Watson and Bontnor, Old Bond Street, carpet warehousemen.
Wildgust W. and E., Beeston, lace manufacturers.
Lucas Laurence and William Nelson, trading as Lucas and Co., Belthorn and Blackburn, Lancashire, cotton manufacturers.
Senior Wm., Bradford Road, Dewsbury, and Albert Mills, Savile Town, Thornhill, woollen manufacturer.
Fowler James and John Fowler, Macclesfield, silk manufacturers.
Graham William, Bradford Road, Dewsbury, wool, hair and waste merchant.
Illingworth John, trading as J. Illingworth and Co., Alexandra Crescent, Ilkley and Baildon Bridge Mills, Baildon, worsted spinner.
Tweedale Robert Leach and John Tweedale, trading as Jacob Tweedale and Sons, Healey Hall Mills, Rochdale, and Portland Street, Manchester, manufacturers and merchants.

Sequestrations.

Paterson Paterson James, (deceased), Dundee, manufacturer.

Trustees Appointed.

Brown William, trading as Brown and Co. (Liquidation), Halifax, damask manufacturer. Trustee, W. Roberts, Halifax, accountant.
Shaw Richard B. (Liquidation), Manchester, worsted merchant. Trustee, M. Preston, Kennedy Street, Manchester, accountant.
Crossley John and Lewis Crossley, trading as Thomas Crossley and Sons, (Liquidation), Halifax, dyer. Trustee, J. P. Birtwhistle, Halifax, accountant.
Fawcett Wm. Lea, Camberwell, and Robert Fawcett, Hartlebury, trading as Fawcett and Watson, late trading as Fawcett Bros. and Co., (Bankrupt), Stourport and Bath Street, London, carpet manufacturers. Trustee, G. K. Patten, Colmore Row, Birmingham, accountant.

Dividends.

Wike George and John M. Wike, trading as John Wike and Son, (Bankrupt), Bread Street, London, Fountain Street, Manchester, and Bury, flannel manufacturers. 1st dividend, 3s. 4d.
Ford William J. and James King, (Liquidation), Friars Causeway, Leicester, hosiery manufacturers. 2nd and final dividend, 4s. 6d.; R. S. Mantle, at Wykes Brothers and Mantle, 24, Friar Lane, Leicester.
Gent Jno. Thomas and Alfred Copeland, and George Riley, trading as Gent, Copeland and Co. (Liquidation), Leicester, hosiery manufacturers. 1st dividend, 8s.; A. C. Palmer, St. George's Chambers, Grey Friars, Leicester.

Dissolution of Partnerships.

Crawford Bros., Barrmill, Beith, and elsewhere, flax spinners, &c. Debts by James Crawford, who is now sole partner.
Crawford, Easton and Co., Glasgow, calenderers, &c. As regards the trustees of Alex. Birrell.
Ainley and Co., Huddersfield, commission weavers and worsted manufacturers.
Anderson, Son and Murray, Newcastle, auctioneers.
Barraclough and Porritt, Dewsbury, rag, hair and wool merchants. Debts by William Barraclough.
Smith and Gledhill, Bradford, woolstaplers. Debts by Thomas Townend Gledhill.
Spence and Wylde, Horsforth, near Leeds, cloth manufacturers and cloth merchants. Debts by Wm. Frederick Heald Spence.
Crawford, Easton and Co., Glasgow, calenderers, &c. As regards the trustees of Alex. Birrell.
Stewart, Ogilvys and Co., Kirriemuir, linen manufacturers. Debts by Robert F. John, and William Ogilvy, who continue the business as Ogilvy Bros.
Stevenson J. and F., Dundee, dyers. Debts by James Stevenson, who has acquired the whole stock, &c.
Ashton and Howorth, George Street, Chorley, waste dealer. Debts by Henry Ashton.
Cochran and Wynne, Dale Street, Manchester, linen manufacturers.
Connell and Bankart, Bolton Woods and Bradford, stuff manufacturers. Debts by Charles James Bankart.
Diggle Bros., Heywood, Lancashire, cotton spinners and builders. As regards James Diggle.

Bills of Sale.

Baxter, Joseph, Shipley, near Bradford, woollen buyer	for	£60 0 0
Hopkins, T., Maymon, T., and Martin, J. H., all of St. Paul's Road, Preston, cotton manufacturers..		further security.
Lombard, J. T., Foleshill, near Coventry, trimming manufacturer	for	£70 0 0 &c.
Senior, A., Earlsheaton, Dewsbury, blanket finisher	for	£17 10 0
Wilkinson, J., Shipley, late yarn agent	for	£77 13 8
Berry, J., Bent Grange Cotton Mill, Oldham, cotton-spinner	for	£855 0 0 &c.
Topping, T., Topping Fold, Bury, flannel merchant	for	£100 0 0
Turner, R., 37, Primrose Bank, Blackburn, cotton manufacturer	for	£30 0 0
Turner, W., 9, Primrose Bank, Blackburn, cotton manufacturer	for	£40 0 0

PATENTS.

Specially compiled for "The Journal of Fabrics"
by G. G. M. Hardingham, C.E., 191, Fleet Street, London, E.C.

*** In the present number of the Journal a slight difference in the arrangement of the Patent record has been made, in order to facilitate the finding of any special patent that may have been granted during the month previous to the date of issue. The list of Applications and Notices to Proceed has been arranged alphabetically. We hope this change will meet the approval of such of our readers as may take an interest in our list of Patents.

Applications for Letters Patent.

		No.
Apparatus for marking lays used in cutting out clothing. W. J. Dann, Dewsbury Road, Leeds.	6th June	2645
Bleaching fabrics. E de Pass (G. D. Davis, Boston)	17th June	2864
Colouring matters for dyeing and printing. J. Erskine, (C. Kœnig, Höechst-am-Main).	30th May	2544
Card setting machines. H. Yates, Cleckheaton (Stedman and Fuller, Lawrence, Mass., U.S.A.)	14th June	2800
Cloth plaiting and measuring machines. C. and A. Edmeston, Manchester.	20th June	2903
Drying fibres and fabrics. Sir H. Scholfield, Nottingham.	30th May	2542
Finishing textile fabrics. E. Edwards (C. and J. Chollet, St. Quentin).	10th May	2743
Looms. W. B. Stitt and J. Lees, Belfast.	30th May	2543
Looms. T, Knowles, Blackburn.	14th June	2795
Looms for cloth. T. Isherwood, Westerley, U.S.A.	19th June	2894
Looped fabrics. (machinery for) W. R. Lake (C. Young, Chicago)	7th June	2672
Looms. R. Illingworth, Blackburn.	22nd June	2959
Measurement of rolled goods at sight. J. Scruby, Romford	19th June	2881
Mules for spinning fibres. J. S. Cooke and A. Hardwick, Liversedge.	22nd June	2963

Pleating machines. C. G. Hill, Nottingham. 5th June 2634
Producing azo-colors on vegetable fibre. C. Holliday, Huddersfield. 21st June 2946
Removing vegetable matter from wool. J. Wetter, (A. Snoeck, Ensival, Belgium). 31st May 2575
Ring spinning machinery. G. Perkins, G. Wimpenny, and J. H. Evans, Manchester. 16th June 2838
Regulating dabbing brushes for combing machines. J. Haigh, W. Dean, and W. Mitchell, Bradford. 2nd June 2600
Starting, driving and stopping sewing machines. A. D. Peutz, Glasgow. 1st June 2584
Screw buttons. F. Wirth (L. E. E. Hunrath, Darmstadt) 1st June 2589
Sewing machinery. A. Greenwood and J. Ramsden, Leeds. 3rd June 2617
Spinning and doubling. R. Scaife, Colne. 9th June 2707
Sewing machines. W. A. Barlow (L. Ghuring and W. Kohrer, Stuttgart). 9th June 2724
Spinning fibres. S. Tweedale, Accrington. 14th June 2799
Sewing machines. W. Fairweather, Manchester. 19th June 2880
Tapestry looms. D. A. Geuille, South Molton Street, London. 31st May 2566
Weaving sacks, bags, &c. W., A., A., A., E. and J. Briggs, Whitworth. 16th June 2852

Grants of Provisional Protection for Six Months.

2249	2253	2255	2267	2287	2301
2343	2290	2292	2328	2283	2417
2433	1816	2326	2386	2418	2448
2463	2469	2478	2481	2483	2502
2510	2513	2542	2600	2634	2523
2525	2535	2543	2575	2579	2566
2672	2724	2617	2645	2649	(all of 1882)

Notices to Proceed.

(Notice of opposition to the Sealing of a Patent must be given within twenty-one days of the Notice to Proceed being advertised in the Journal.)

Beating apparatus for washing textile materials. W. R. Lake (Gillet et fils, Lyons). 31st Jan. 487
Bleaching without chlorine. P. Thomas, Elberfeld, Germany. 4th Feb. 549
Bleaching and washing. W. H. Beck (C. M. Levy and G. Alexandre, Paris). 20th Feb. 812
Coloring matters for dyeing. J. Erskine (C. Rumpff, Aprath, Germany). 12th May 2242
Coloring matters for dyeing. C. D. Abel (E. Jacobsen, Berlin) 20th Feb. 814
Coloring matters for dyeing. C. D. Abel (C. A. Martins, Berlin) 3rd March 1030
Circular knitting machines. J. W. Watts, Counterthorpe 21st Feb. 841
Dyeing and printing and colors therefor. W. W. Richardson, Nether Mills, Leeds. 31st Jan. 470
Drying wool, &c. J. B., C. H., and W. Whiteley, Lockwood 20th Feb. 807
Doubling cotton, &c. F. J. Smith, Heywood. 18th May 2328
Drying wool, &c. J. Shaw, Huddersfield. 6th Feb. 572
Elastic fabrics. T. H. Harrison, Derby. 25th Feb. 919
Grippers for stretching fabrics. J. Hardaker, Leeds. 23rd Feb. 884
Knitting machines. J. Poole, Bradford. 17th Feb. 773
Knitting machines. T. Priestley, Bradford. 7th March 1092
Looped fabrics. J. and H. Kiddier, Nottingham. 13th May 2255
Looms. W. H. Hacking and E. Grube, Bury. 15th Feb. 734
Looms. J. Hollingworth, Dobcross. 13th Feb. 699
Looms. D. Bailey, Yews, Lockwood. 7th March 1091
Regulating speed of warp beams. H. H. Lake, (Tassigny Frères, Paris). 15th Feb. 745
Ring spinning and doubling frames. S. Brooks and A. Holden, Gorton. 2nd March 998
Sizing and wringing hanks. J. Coulong, Blackburn and J. Robertshaw, Manchester. 1st Feb. 499
Scouring, milling and washing machinery. A. C. Adams and D. Stewart, Glasgow. 21st Feb. 826
Winding two or more threads on to one spool. W. T. Stubbs and J. Corrigan, Manchester. 17th Feb. 782
Wool combing machines. W. R. Lake (W. H. Grundy, Bristol, Pa). 23rd Feb. 881
Wool washing machinery. W. R. Lake (E. Mehl, Augsburg, Germany). 24th Feb. 908
Weaving apparatus. E. O. Taylor and T. Brierly, Marsden. 7th March 1090

Patents Sealed.

5423	5443	5449	5493	5531	5559
5626	5658	5692	5726	(All of 1881)	
38	51	158	307	466	573
996	1374	1418	1433	1593	1860
5628	5678	5736	(All of 1882)		

Patents on which the Stamp Duty of £50 has been paid.

John Kiddier, James Kiddier, John William Kiddier Herbert Kiddier, machinists, Nottingham, "Improvements in apparatus employed in the manufacture of knitted fabrics." 3rd June, 1879 2200
Charles Denton Abel, Southampton Buildings, "A new or improved treatment of cotton fibre for enabling it to be dyed or printed with colouring matters used in the dyeing or printing of silks." A communication. 3rd June, 1879 2184
Hector Auguste Dufrené, 10, Rue de la Fidélité, Paris. "Improvements in sewing machines."—A communication. 14th Nov. 1879 4638
J. Hesse, San Francisco, engineer, "Improvements in sewing machines for sewing carpets, and for other like purposes." 6th June, 1879 2250
James Jeffs, 43, Hanover Street, Islington, London, "Improved machinery or apparatus for manufacturing and making coloured, and white and black, surface and glazed, or printed papers or other fabrics." 9th June, 1879 2265
John Charles Walker, Shipley, near Leeds, "Improvement in the means or apparatus employed for combing wool and other fibrous substances."—A communication. 13th June, 1879 2346
A. M. Clark, 53, Chancery Lane, London, "An improved composition covering for the rollers of preparing and spinning machinery."—A communication. 17th June, 1879 2407
James Dean, Victoria Works, Derby, "Improvements in the manufacture of elastic web or cloth." 14th June, 1879 2359
James Nasmyth Wilson, Flixton, Lancaster, "Improvements in machinery for printing fabrics." 5th July, 1879 2749
William Tatham, Rochdale, machine maker, "Improvements in engines or machines used for preparing and carding fibrous materials." 21st June, 1879 2475

Patents on which the Stamp Duty of £100 has been paid

Horatio Stead, Halifax, engineer, and Bennett Appleyard, Wakefield, "Improvements in apparatus or machinery for steaming woven fabrics." 2nd June, 1875 2033
Ephraim France and Alfred Bradsworth, Leicester, "Improvements in the manufacture of elastic webs, and in the machinery or apparatus employed therein." 12th June, 1875 2163
Thomas Unsworth, Manchester, "Improvements in stop motion, winding doubling frames." 28th June, 1875 2341
Thomas Henry Rushton and Benjamin Alfred Dobson, both of the firm of Messrs. Dobson and Barlow, Bolton, and James Macqueen, machinist, of the same place, "Certain improvements in combing machines." 23rd June, 1875 2292

Copyright of Designs.

(Registered during June, 1882.)

Class VI., Carpets.

381,607 Storey Bros. and Co., Lancaster.
381'807-809 The Merton Floor Cloth Co., Merton.
381,967 Whitwell and Co., Kendal.
382,031-35 J. Crossley and Sons (Limited), Halifax.
382,135-36 J. Crossley and Sons (Limited), Halifax.
382,323-27 J. Crossley and Sons (Limited), Halifax.

Class XI., Furnitures.

381,527-28 Edmund Potter and Co., Manchester and Dinting.
381,565 Weiss Fries, Mulhouse.
381,676 R. Daglish, Falconer and Co., Manchester and Glasgow.
381,915-16 Thomas Hoyle and Sons (Limited), Manchester.
381,972-73 Daniel Lee and Co., Fountain Street, Manchester.
381,974-76 The Rossendale Printing Company, Manchester.
382,064 Boden Terras, and Co., Manchester.
382,065 Daniel Lee and Co , Fountain Street, Manchester.
382,189 Daniel Lee and Co., Fountain Street, Manchester.
382,252 Alexander Drew and Sons, Nicholas Street, Manchester.
382,294 Morris and Co., 449, Oxford Street, London.
382,295 W. Rumney and Co., 53, Portland Street, Manchester.
382,334-6 Thomas Hoyle and Sons (Limited), Manchester.

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Contents.

	Page.
The Fine Art and Industrial Exhibition at Worcester	13
Trade Statistics	13
The New Act on Boiler Explosions	14
The Production of Rhea	14
Manufacture of Cut Pile Fabrics	15
The Eng ish and Spanish Tariffs	16
Wool-Combing Machinery	16
The Weaving of Reversible Fabrics for Printing	16
Improvements in Looms for Weaving Gauze Fabrics	17
The German Commercial Geography Society	17
Scientific and Art Notes	17
Original Designs	18
Monthly Trade Reports	18
"Owen Jones" Prizes, 1882	
The Madrid Tapestry Works	18
Original Coating Designs	19
Manufacture of Mixture Yarns	19
The Ribbon Manufacturing Industries	20
The Russian Tariff	20
The Bradford Fine Art and Industrial Exhibition	20
Odds and Ends	22
The Gazette :—	
Bankruptcies, Liquidations, &c.	23
Dissolutions of Partnership	23
Bills of Sale	23
Letters Patent :—	
Applications for Letters Patent, etc.	23
Copyright of Designs	24

Illustrations.

A Design for Muslin Curtain.
A Design for Silk Damask.
Original Coating Design.
Tomlinson's Patent Damping Machine.

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The Fine Art and Industrial Exhibition at Worcester.

THE opening of the Fine Art and Industrial Exhibition at Worcester, which event took place on the 18th ult., was an occasion of very great importance, and the interest which it excited amongst the population of the county of Worcester was, we are bound to admit, unexceptional, for at no previous provincial exhibition, we may venture to state, have the community at large worked so harmoniously together to further the interests of the various manufactures that abound in the county. Instead of a difference in opinion existing amongst manufacturers of the same class of goods, which generally prevents their working together for a common end, at Worcester we find them going hand in hand, and in consequence furthering each other's interests to a great extent. The committees of management are to be highly complimented on the efficiency with which they have so far done their work, we are sure that the undertaking will meet with the success it undoubtedly deserves, and will prove not only to the country at large, but to foreign nations, that the industries in Worcestershire, many of which are confined to that county, are still able to produce certain classes of manufactures of so superior a quality that they can compete satisfactorily with other producers abroad of the same classes of wares. It is scarcely within our province to deal with any arts but those relating to fabrics, still, notwithstanding this, we cannot refrain from adding that, in every department of the Exhibition, the various displays are of very excellent merit, and worthy of every attention from the visitors. In the displays of carpets, &c., some of the Kidderminster firms have fairly surpassed themselves in the excellence of their exhibits. Perhaps in some cases the fabrics have not been hung in such a manner as to bring out all their good points, yet on the whole the displays are very creditably arranged. The firms that have come forward with such a commendable spirit include Messrs. J. Brinton & Co. (Ld.), Messrs. Tomkinson and Adams, Messrs. H. R. Willis & Co., Messrs. Woodward, Grosvenor & Co., Messrs. H. J. Dixon & Sons, Messrs. Richard Smith & Sons, Messrs. Watson & Naylor, Messrs. Atkins & Naylor, Mr. G. O. Holloway, Messrs. E. Webb & Sons, Worcester and Mr. T. B. Worth, Stourport. The whole of the exhibits are of unexceptionable merit. If the above-named firms had vied with each other to their utmost to eclipse each others' productions in point of design, colouring, taste, and general excellence of manufacture, we doubt if they could possibly have succeeded in placing before the notice of the visitors a more magnificent display of carpets than is now to be seen in the exhibition. In addition to their displays of carpets, many of the above firms exhibit looms in working order. Messrs. H. R. Willis & Co. are showing a three-quarter Brussels power-loom for weaving Brussels velvet (or cut pile) carpets. It is provided with the necessary changes to weave ordinary loop Brussels, by a special construction of the jacquard, by which it it can be easily arranged to weave either five or six frame carpets. This loom is at present extensively used both at home and abroad by the leading carpet manufacturers ; and we believe that the quality woven is not surpassed, if equalled, by any loom in the trade. It was patented by Messrs. J. Crossley & Sons (Limited), of Halifax, and has been built by Messrs. J. Crossley & Co., machinists, of the same town. Messrs. Morton & Sons, of Kidderminster, exhibit a three-quarter Brussels carpet loom that is weaving the now celebrated Moresque carpet, that was registered a few months ago, and which has proved such a success both in the United Kingdom, and the United States. The weaving of these Moresque carpets is a very prominent feature in the Exhibition, and attracts the attention of the numerous visitors. Messrs. J. Brinton & Co.'s., machinery includes the appliances for carding, combing, and spinning wools, &c., and also a tapestry loom. Messrs. R. Smith & Son, show looms for weaving Imperial damask carpets, Chenille Axminster carpets and rugs, and finger rugs, &c. Messrs. Woodward, Grosvenor & Co., run a power loom adapted for weaving Brussels and velvet pile carpets, with various recent improvements, by which the speed of the loom is accelerated ; the quality of the fabric being fully maintained. Messrs. Tomkinson & Adam, show a Royal Axminster loom, and also a balling machine, &c. Many of the above appliances are of course common to the carpet manufacture, but they are, nevertheless, of great interest to visitors at large. The promoters of the exhibition cannot fail to be satisfied with the results of their labours, up to the present time, and as to the future, we are convinced that the venture, having been placed on such a magnificent scale, must assure its success financially.

Trade Statistics.

The London Chamber of Commerce has addressed the following communication to the chairman and members of the Statistical Inquiry Commission :—

The London Chamber of Commerce has had under its consideration petitions from the leading merchants of London and Manchester against a proposal which, it is stated, has been made to your Committee, to enforce the giving of weights as well as the value and length of textile (and more especially, it is believed, of woollen) goods exported from this country. Further petitions to the same effect, we are informed, are in course of signature in Bradford and Glasgow. Three Special meetings have been held by the Chamber to consider this question, and after a correspondence with the Chambers of Bradford, Leeds, Huddersfield, Dewsbury, Halifax, Batley, Morley, and the South of Scotland, the London Chamber has arrived at the conclusion that the proposed indication of weights cannot be carried out in practice in such wise as to lead to correct or useful returns. Its conviction is, on the contrary, that weight returns would be incomplete and erroneous, and consequently misleading and unreliable as statistical data. In making this statement the

London Chamber must be understood to be speaking from the merchant's or warehouseman's and not from the manufacturer's point of view. The signatures to the appended positions are those of the leading merchants or warehousemen of London and Manchester, through whose hands a large portion of the export trade passes. Manufacturers, no doubt, export large amounts of goods. The London Chamber speaks neither for nor against them. Perhaps in their case weight indications might be easier, as producers generally limit their manufacture to special qualities of goods, the weights of which per piece are pretty accurately known. But this simplicity of procedure disappears in the merchant's warehouse, where the textiles of Yorkshire, the West of England, Scotland, Germany, and France are indiscriminately mixed up. Textiles, and woollens in particular, are always sold at a price per yard. It is therefore easy, by means of the invoice, to obtain the accurate length and value of a shipment. These data can only be invalidated on the assumption that all invoices for export are wilfully falsified—an assumption which needs no refutation. On the other hand, textiles are rarely, if ever, sold by weight. Weight is perhaps stipulated for in the first instance as between the manufacturer and the merchant, but never between the merchant and his foreign buyer. Price per yard and quality are their only qualifications. To stipulate for weight indications from the merchant is therefore to ask for details which are beyond the customary practices of his trade, and would consequently entail delay and expense for which the statistical returns —as necessarily inaccurate—would be no adequate compensation. Secondly, we would urge that there is no correlation between weight and value in textiles. Nothing is easier, particularly in woollens, than to find a heavy and a light cloth of identical value, or two cloths of similar weight of entirely opposite prices. The export of a ton of woollens, from Dewsbury would hardly represent a quarter of the value of a ton of textiles from Bradford, Glasgow, or Hawick. The statements of the Bradford and and other woollen Chambers in favour of *ad valorem* and against specific duties in the late Anglo-French Treaty negotiations amply demonstrate, if proof be necessary, this well-known fact, that there is no relation between the weight and the value of textiles. Lastly, it would be difficult for merchants in their exports to distinguish between home made and foreign made goods. These are mixed up indiscriminately in their warehouses, and could not be again sorted without great trouble and expense. As a considerable portion of the imports of foreign made textiles are consumed in the kingdom the deduction of the imports from the exports would not indicate, with any approach to accuracy, the real quantities of foreign-made goods which would, in the proposed returns, appear as British. For these various reasons, then, the London Chamber, whilst most desirous of arriving at more accurate returns of our trade statistics, does not see that the proposed indications of weights would contribute to any improvement of our present system, and, therefore, appeals to the Committee not to complicate the difficulties of foreign competition with formalities which would entail expense and delay on our export trade without any guarantee either of accuracy or of logical comparison.

The New Act on Boiler Explosions.

The new Act to make better provision for inquiry with regard to boiler explosions has been issued. The law is now extended to boiler explosions on board ship and on railways, and courts of summary jurisdiction have authority in such matters. On the occurrence of an explosion from any boiler to which the Act applies notice is to be given within twenty-four hours by the owner to the Board of Trade, or by the user of the boiler, or by the person acting on behalf of the owner or user, to the Board of Trade, and in default the person, on summary conviction, to be liable to a fine not exceeding £20. The Board of Trade is empowered to direct an inquiry, as to the explosions, by engineers as a preliminary enquiry, and the Board may order a formal investigation to be held in open court, and the usual powers to be vested in such court Expenses of inquiries are to be provided for by the Board of Trade, and such orders may be enforced, and all extra expenses not authorised are to be paid out of money voted by Parliament. The Act is now in force.

The Production of Rhea.

(Continued from Page 3.)

THER countries appear to be succeeding in pushing the fibres in which they are interested; for instance, the Dutch have lately been sending over consignments of prepared ramie fibre from Java to the Continent, and some bales have lately reached the English market, where they are stated—although not very well cleaned—to compare not unfavourably with China grass. I have not, however, been able to ascertain by what process this Java fibre is prepared.

In Réunion, a French naval surgeon (M. Renaud) has found a process for easily and rapidly preparing the fibre, by means of an alkaline bath, the strength of which is to be tested by Gay Lussac's densimeter, in order to avoid its being so strong as to weaken the fibre; and in Paris, Messrs. Laberie and Berthet have patented a machine which they have worked for some time, and which is said to prepare about 800 kilogrammes of fibre from green stems per day of ten hours. In America, Messrs. Dennis and Angell have patented a machine which is said to be capable of thoroughly and rapidly preparing the fibre from ramie stems, although it was originally designed for jute; according to the most recent advices, this machine has not yet been perfected, and the inventors purpose carrying out some experiments during the coming summer, with a view to its improvement.

Incidentally it may be mentioned that in the course of his experiments, M. Renaud claims to have discovered that the planting of rhea among vines protects the latter from the attacks of the *phylloxera* and even cures those which are already attacked by that dreaded pest; if events should bear out the correctness of this claim, a great boon will have been conferred on vine growers.

In England, numerous experimentalists — some tempted solely by the hope of gaining the Indian prizes, and others, induced by an honest wish to make a valuable fibre more suitable for use by manufacturers, and to add another to the list of useful substances with which India supplies Europe—have, for years, been expending money, and time, and energy, in the endeavour to perfect some machine or process for preparing this fibre for market; but it cannot be said that, as yet, anyone has been entirely successful, though many processes have appeared to act remarkably well with small experimental lots of stems.

Time would not suffice, on the present occasion, to give anything like a complete list of all the experimentalists, but, generally speaking, it would appear that those who have adopted the simplest machinery, or processes, have produced the most satisfactory results. Among others who have devoted a great deal of time to the solution of the problem, I may mention that Mr. Sebastian Anderson has succeeded in producing some very excellent samples, in which the separate filaments of the fibre are all as parallel to one another as they were in the original stems. He has not communicated the details of his process to me; but he tells me that he can, with perfect ease, separate the bark and gum from the fibre of either green or dry stems; after stripping the bark and fibre from the stems by hand, he soaks the strip thus removed in a bath, which, while in no way weakening the fibre, thoroughly removes every particle of bark and gum. He has informed me that he is endeavouring to make arrangements for the carrying out of his process in India, and for the transmission of the prepared fibre to London for sale. It is to be hoped that Mr. Anderson's efforts may be crowned with success, but it is worth considering whether, seeing what a continued demand there is for the fibre which comes from China, and which is all hand-prepared, the first endeavour should not be to imitate as closely as possible the Chinese hand process—notwithstanding its slowness,—and to try to forward from India supplies of hand-prepared fibre of as good a quality as the Chinese. There does not seem to be any insurmountable obstacle in this direction, neither does there seem any reason why the fibre could not be grown and prepared as cheaply in India as in China. Above all things, it is to be hoped that experimentalists will not be discouraged by the results of the

trials held at Saháranpur, in 1879, and that they will not assume that, because the samples of fibre sent to England as the result of those trials were all inferior, both as regards quality and as regards their mode of preparation, therefore India is incapable of growing fibre of good quality, if only she is shown how to prepare it for market.

The proprietors of the Jugdespore estate, in the Shahabad district of the Patna division of Bengal—the estate of the zemindary referred to in Mr. Mylne's interesting paper, which was read before this society last month—thinking it probable that the Indian rhea problem is more likely of solution as a domestic industry than by means of centralised machinery, have been making experiments in that direction, in the cultivation of the plant and hand preparation of the fibre; the results of the former are satisfactory, and the latter has to be introduced into the homes of the people as a new industry. It has been ascertained by experiment that if the green stems are stripped by hand of their envelope of bark and fibre as soon as they are cut, and if the strips are allowed to simmer for a short time in a weak solution of potash, the bark and gum can, with the greatest ease, be scraped or rubbed off from the fibre. Mr. Mylne and his partners propose that this part of the work shall be done mainly by women and children, who will thus be enabled to earn a little money in their own homes; if this part of the scheme succeeds, a great point will have been gained, seeing that the difficulty of finding domestic employment suited to the poorer native women of high caste, who are not permitted to work in the fields, is well known.

The proportion of potash which has been found, after several experiments, to be the best, is about 2½ lbs. to every 100 lbs. of green strips of bark; and the length of time for simmering varies from two to three hours. Some samples of rhea fibre, prepared by this process by natives in India, have been sent over to England, and valued by brokers at £40 a ton, at a time when China grass was at £48; this is a proof of the success of the hand process, and it also appears that the potash bath, when of the proper strength, does not weaken the fibre; for some dry bark has been left to soak in the mixture for from 10 to 15 days, after which time the fibre was found to have lost none of its original strength. It is probable that, before long, some inexpensive mechanical adaption may be found, which will supplement or assist the hand process; and with this view, Mr. Mylne is experimenting with some simple machinery, which he believes will enable the women to separate the fibre from the bark much more rapidly.

If these efforts are successful, they will have the effect not only of creating a new domestic industry in many parts in India, but also of bringing into the English market a fibre which will be more thoroughly cleaned, and at a lower price, than heretofore; when this has been done, it will be suitable for a far wider range of manufactured goods than at present. Owing to its scarcity, and consequent high price, rhea of good quality can now only be used to replace, or mix with silk or wool; but if only the price would allow, it would be at once found suitable also for use in that far larger class of goods in which flax is now used. It may be safely asserted that cheapness of production and cleanness of fibre are the only two points which need attention in order to create an almost endless demand in this country for Indian rhea fibre; for although there are still certain mechanical difficulties in the manipulation of the fibre in the processes of manufacture; these are not insuperable.

Within the last days I have had an opportunity of seeing at work in London a machine patented by M. Roguet, in which dry rhea stems have been tried; some of the samples produced are shown here this evening, and it will be observed that they are not very free from bark; but it is to be hoped that further experiments may show an improvement in this respect.

It is to be regretted that statistics are not available to show the actual amount of China grass imported from this country during the last few years. Messrs. Manning and Collyer state that, in 1872, about 139 tons were imported, but that since that time the consumption has fallen off very materially, and that for the last ten years, the average has probably been not much more than 50 tons, or certainly below 100 tons per annum; this small consumption is, however, merely due to the small amount of fibre which comes into the market, and its present high price.

Messrs. Mark Dawson & Sons have kindly sent me a few specimens of the applications of China grass to manufactures, and these, as well as some specimens of Indian grown rhea prepared by different processes, are now shown here.

The first idea which occurs to one, after a survey of these new trade productions of India, which have in a few years become of such great importance, is, that they afford another proof of the immense latent productive force of India; in fact, they show us that when at last, after many patient efforts, any new Indian product has been introduced into the markets of the world, the trade in it is likely to quickly assume vast proportions. India abounds in vegetable products, which are capable of being put to endless uses in modern manufactures, if only they can once be properly got at; while the country seems capable of raising, not only these vegetable productions which are indigenous to it, but also those of nearly every other country of the tropical and sub-tropical zones.

Manufacture of Cut Pile Fabrics.

Any method of producing designs of richer and more varied tints on what are known as moquette carpets and other cut pile fabrics will, we are sure, be heartily welcomed not only by the art furnisher but also by the manufacturer and consumer of this class of goods. A few months ago an invention was patented, having for its object the production of more varied and richer tints than is possible according to the methods now adopted, and at the same time the effecting of a considerable economy in the cost of production. "Moquette carpets," says the inventor, "have hitherto been manufactured with a ground web of tow, flax or hemp, which forms the back of the fabric; and in order to produce the pile or face of the carpet woollen threads or yarns wound in pairs of the same colour upon spools are employed," but according to this invention, the threads forming the pile are wound singly upon the spools or bobbins, whereby it is rendered possible to obtain a greater variety of effects than when the ordinary system is adopted, and the method of preparing the design on the cards is correspondingly modified in order to produce the required combination of colours in the finished article.

In carrying out the invention, the bobbins are carried on suitable frames, and are each wound with one woollen thread instead of with two threads as now used, whereby a considerable economy is effected in the amount of wool required to produce a given design. A variety of different qualities may be obtained in the finished product by employing different numbers of frames, each frame being composed of, say, two hundred and fifty bobbins. Assuming, by way of illustration, that six different colours and a corresponding number of frames are employed, a great variety of shades of colour is obtained by providing each frame with two hundred and fifty bobbins, for example, of one colour arranged in the following manner, viz.:—

1st frame,	250 bobbins	each	carrying	1 thread,	colour	light yellow.
2nd	,,	,,	,,	,,	,,	,,	olive green.
3rd	,,	,,	,,	,,	,,	,,	green.
4th	,,	,,	,,	,,	,,	,,	light blue.
5th	,,	,,	,,	,,	,,	,,	red.
6th	,,	,,	,,	,,	,,	,,	dark blue.

With these six series of coloured pile threads of wool the colours or combinations next hereafter specified as combined in the manufacture of the fabric are obtained by causing two threads of different shades to work together.

1st effect,	light yellow	combined	olive green	to produce one shade.					
2nd	,,	,,	,,	,,	green	,,	,,	,,	,,
3rd	,,	,,	,,	,,	light blue	,,	,,	,,	,,
4	,,	,,	,,	,,	red	,,	,,	,,	,,
5	,,	,,	,,	,,	dark blue	,,	,,	,,	,,
6	,,	olive green		,,	green	,,	,,	,,	,,
7	,,	,,	,,	,,	light blue	,,	,,	,,	,,
8	,,	,,	,,	,,	red	,,	,,	,,	,,
9	,,	,,	,,	,,	dark blue	,,	,,	,,	,,
10	,,	green		,,	light blue	,,	,,	,,	,,
11	,,	,,		,,	red	,,	,,	,,	,,
12	,,	,,		,,	dark blue	,,	,,	,,	,,
13	,,	light blue		,,	red	,,	,,	,,	,,
14	,,	,,	,,	,,	dark blue	,,	,,	,,	,,
15	,,	red and dark blue				,,	,,	,,	,,
16	,,	two threads of dark blue for ground					,,	,,	,,

It will be observed that one colour is never used alone in making one of the points in the designing. These colours are obtained by taking two threads together in reading the design. According to this improved method five hundred threads are lifted in weaving each point of the fabric, corresponding to one pin or wire in lieu of two hundred and fifty, as in the case of weaving

Moquette or pile carpet, according to the method heretofore adopted. In weaving fabrics according to this improved system of manufacture the manner of reading the design is changed, as will be readily understood on considering that one thread only is used as an equivalent for the pair of threads of the same colour usually employed. Any suitable mechanism may be employed for operating the thread, and assuming that three series of variously coloured threads are employed with a corresponding number of lifting apparatus or mechanism for operating the same, each of the said apparatus being connected with five hundred hooks, the threads will be lifted in series corresponding to the following combinations, viz.:—

1st. Lifting apparatus operating 500 hooks	250	hooks for the spools of light yellow in one thread.
	250	,, ,, ,, ,, ,, olive green ,, ,, ,,
2nd. Lifting apparatus operating 500 hooks	250	,, ,, ,, ,, ,, green ,, ,, ,,
	250	,, ,, ,, ,, ,, light blue ,, ,, ,,
		red ,, ,, ,,
3rd. Lifting apparatus operating 500 hooks	250	,, ,, ,, ,, ,, dark blue in one or two
	250	,, ,, ,, ,, ,, threads.

The designs for the cards are painted with all the tints that can be obtained by combing together the two colours that form one shade. The design for the card is given to the reader with a gamut or scale of the composite tones (similar and corresponding to the design for the card), which he must read in connection with each harness. The reader does not know the colours which are in the loom. For example, in order to read a design comprising the series of colours hereinbefore specified, the reader reads upon the first row of points on the design the composite shades which are coloured to agree with the card in its order of reading, and he is aware that when he reads these shades the card when in the loom will lift the light yellow in the first set of harness by means of the two hundred and fifty hooks connected with the first lifting apparatus. This light yellow only forms one of the two series of threads which are necessary to make the required shade, and it is requisite to combine it with a thread of another colour. For this purpose the reader looks for this second thread in another set of harness, which is pointed out to him in the order of reading for the same colour. If it appears to be in the second harness, he will cause an olive green to be lifted; the combination of these two colours will thus be light yellow and olive green. If it appears to be in the fourth harness, a light blue will be lifted, and a combination of these two colours will be light yellow and light blue, and similar results will be obtained in the case of the other colours. In order to obtain the five hundred threads required for each wire or row of tufts the reader has in his order of reading to read twice the same effect in two different sets of harness. In the case of Moquette as now manufactured no more than six colours are generally obtained in the direction of the length of the fabric in preparing a design to be woven in a loom provided with six frames or six warps, each containing two hundred and fifty threads. By means of this invention it is possible to obtain fifteen mixtures or combinations of different tones, plus the blue ground, with one or two threads in order to produce all the effects of tint required in the direction of the length as well as in the direction of the breadth of the fabric, whilst at the same time a great variety of effects is obtained by reason of the number of combinations or mixtures which are rendered available by the large quantity of different tints employed. The patentee claims that carpets manufactured according to this invention are cheaper than the Moquette or cut pile carpets manufactured by employing the same number of frames or webs of wool, because the weight of wool used according to this improved method is but a little more than one half of that usually employed. The operation of weaving is carried out in other respects in the manner and by the means ordinarily employed in the manufacture of cut pile fabrics. The invention is also applicable to the manufacture of fabrics or stuffs for table cloths, upholstering, and other similar purposes, and enables the same advantages to be realised in the case of these goods as in the case of carpets with regard to the richness of the tints and economy in the production.

We may add that this patent only received provisional protection.

The English and Spanish Tariffs.

As English and Spanish tariffs are again being discussed in the Madrid Press, it is opportunate to state that several weeks ago the Government instructed the British Minister in Madrid to offer to Senor Comacho, as a preliminary and starting point of negotiations for a definite settlement of the wine duties and of the commercial relations between the two countries, the following conditions—namely, that England would immediately raise to twenty-eight degrees instead of twenty-six degrees the limit of the one shilling duty per gallon on all foreign wines, and England would undertake to repress by all means in her power the contraband trade between Gibraltar and the Spanish Coast around the Rock, as well as via the neutral ground and in the waters of the Algerias, a matter of the highest moment for Spanish Revenue. England, in exchange, demanded that most favoured nation treatment be restored to her imports on the same footing as France, and, in fact, a return to the status quo existing up to 1877, when Spain suddenly created differential duties on the imports of nations that had no special Treaty of Commerce. If Spain had accepted this new modus vivendi, it seems, her Majesty's Government would, at a later period, have been more willing to entertain the idea of a Treaty of Commerce.

Wool-Combing Machinery.

On Wool-Combing by Modern Machinery.*

By Mr. F. M. T. Lange, of St. Achuel-les-Amiens.

(Continued from Page 5.)

Holden's machine has two pairs of feeding rollers, but instead of having a reciprocating arm like Opell and Crabtree's, or a drum with a series of combs to take the fringe, and then have the projecting tuft combed by card rollers, the feeding-on rollers, called "boxers," themselves lash the wool into the receiving comb. After this it is held by a pressing plate, and the projecting fringe is combed by a set of gill fallers working from the bottom upwards. This apparatus is called the "square motion." The fallers have some eighteen rows of pins, and are seven in number; the wool taken by the square motion is called "robbins," and is returned to the cards. The carrying comb has two rows of pins and is 4 feet in diameter. A comb called a "necteur," larger by two or three rows of pins, and sometimes made in segments, comes down into the tuft or combed fringe to prevent impurities passing through at the drawing-off, which is effected by horizontal rollers. The "noil" is afterwards taken out of the receiving comb by means of a small scraper moved rapidly up and down.

Smith and Bradley's, and Mirfield and Scott's improvements on Noble simply provide a very narrow clean layer in the slivers, as they come round to be deposited in the minute space between the two circular combs. This small clean space is obtained by depositing the slivers in the large comb before they come round to the point of coincidence, then withdrawing them a little way so as to give the beginning of a combing, and then lifting them again and advancing them, so as to deposit this combed and cleaned part just at the point of coincidence of the two combs. This is with the view of preventing any small button or nep escaping into the "top."

Little and Platt's machine consists of a wheel or frame, with some six or more sets of nipping apparatus on it. These take tufts from a screw-gill feeding-head, and deposit them in a circular receiving comb after the general manner of Lister's machine; the sliver is afterwards drawn from the receiving comb by drawing-rollers in the usual way.

Lange's machine, which was fully described and illustrated in our June issue, introduces an entirely new process, and for the first time combs the whole of the "top" out of the wool before letting it go. This is accomplished by first combing out the bulk of the "top," and then combing out such portions of "top" as are still left mixed with the noil. It thus obtains a much larger proportion of "top," and leaves nothing but absolute noil to be stripped out of the comb, and go away as noil, instead of having so much "top" mixed with the noil, as to necessitate recarding before the whole can be finally combed It is another advantage of this machine that it leaves the wool full length after combing, because it is invariably placed on two combs, which comb the wool by separating; so that it is neither held down by pressing plates, nor drawn off with anything like a nip, holding the wool fast.

* Paper read before the Institution of Mechanical Engineers.

The Weaving of Reversible Fabrics for Printing.

An invention, having for its object the production of a cloth which should have a firm flat face and back similar in appearance to each other for printing upon, was the subject of a patent issued a short time ago, but which received provisional protection only. The main object of the patentee was to produce a cloth having threads of weft, which while under the printers' or finishers' hands should not swerve or move during the time the pattern was being put upon the cloth, thus enabling the printer to produce a more perfect pattern. In addition, it had for its object the making of the same cloth to serve for raising and finishing, so as to have the appearance and feel of a kerseymere, and to be free from either twillyness running across the cloth, or the ribbyness running the warp way of the material such as is seen in moleskins, velveteens, &c., made for either

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raising or cutting. In order to carry out the idea a double or reversible cloth may be produced by arranging the picks of weft alternately to back and face alike either with or without what are technically called "binding picks." The following is an example of "tie up" with five shafts, but six or more shafts may be employed to obtain the same cloth for the purpose, and it may be varied by the draft and by the arrangement of the tappet :—

First pick under warp threads one. two and over three. four and five; second pick over one. two and under three. four and five; third pick over one. two. three under four and five; fourth pick under one. two. three. over four and five; fifth pick over one under two, three over four and five; sixth pick under one over two. three under four and five; seventh pick under one over two. three. four and under five; eighth pick over one under two. three. four and over five; ninth pick over one. two under three. four and over five; tenth pick under one. two over three. four and under five.

The following is the same tie up as the preceding but with two binding picks introduced :—

First pick over one under two over three under four over five; second, third, fourth, fifth and sixth picks as in the previous example the remaining binding pick is introduced after the fifth pick of the tie up before described and in the present forms the seventh pick thus—seventh pick under one over two under three over four and under five; eighth, ninth, tenth, eleventh, and twelfth picks are shown in the sixth, seventh, eighth, ninth, and tenth picks of the first tie up.

Improvement in Looms for Weaving Gauze Fabrics.

The specification of an invention has been issued relating to an improved loom for weaving figured gauze fabrics which was patented six months ago. It consists of causing the crossing of the warp threads by imparting a sideway motion to the reed-heddle, and also in the arrangement and combination of parts constituting the mechanism by which such fabrics are produced. The reed-heddle used is the one generally in use, and known as the "gauze-reed." As hitherto, each alternate warp thread passes through the eye in the short split of the gauze-reed, while the other warp threads pass through the open spaces formed by the long slits. In weaving gauze, the up and down motion of the warp which is required for forming the ground shed, may be conveyed either (*a*) wholly to the warp threads passing through the eyes of the short slits by means of the gauze-reed; (*b*) wholly to the other warp threads by means of a short-reed or comb; in the case of figured gauze by means of the jacquard harness; or (*c*) partly to each set of warp threads by the above respective means. The inventor does not claim as a new idea any of the above modes of producing the up and down motion. Instead, however, of the crossing required for producing gauze being effected as hitherto by the warp threads which pass through, the open spaces of the gauze-reed being moved sideways by means of a second reed placed behind the gauze-reed, or other means in use for that purpose, the warp threads which pass through the eyes of the short splits are moved sideways so as to be drawn across the other warp threads, and the second reed or other means named is dispensed with. In order to effect this the gauze-reed has in addition to any up and down motion which it may have a sideway motion alternately from right to left, and *vice versa*, of sufficient range to effect the crossing. In weaving figured gauze the shed required for the figuring weft is produced by the usual jacquard apparatus operating by means of harness on the warp threads which pass through the open spaces of the gauze-reed, and the mechanism is so arranged that the gauze-reed will move sideways at a time when the whole of these warp threads are clear of the short splits, and thus draw the other warp threads across them.

Embossed jute plush is made in the same manner as ordinary velvet. To emboss all such pile fabrics hot cylinders are used, and by passing them through a severe ironing process, deepened, satin-like indentations are produced, while the other fibre, which has not been pressed, retains its original form. The back part of the tissue is moistened with glue water, by which the raising of the once-pressed fibre is prevented. The linen, which serves as a cover for the table on which the pressing is done, can also be treated with a weak solution of shellac in alcohol, then the velvet is placed on and pressed. By this operation the shellac penetrates the tissue and fastens the pressed fibre in such manner that it cannot be loosened by moisture. The brightness and solidity of the appearance of these goods render them especially adapted for upholsterers' goods, also for curtains and wall covers; and as they are safe against moths, it is expected that they will come into common use.

The German Commercial Geography Society.

In Germany great efforts are being made to promote foreign commerce. The Society of German Commercial Geography at Berlin is especially intent upon promoting trade in every way. The society founds branch offices in many foreign parts, and enters into correspondence with Germans who reside in far-off countries, who study the requirements of the countries they inhabit, and seek for new channels for disposing of Germany's industrial products. The society has founded a German export office in Berlin, as a means of centralising the results of its efforts. Here information can be obtained as to all foreign markets. The export office intends sending abroad merchant travellers, who will represent all the important exporting firms; it will institute large pattern depots, and will give the addresses of important firms for export and import. Exhibitions of important foreign materials and articles will also be made at the export office, and information will be given as to the commercial legislation and the patent systems of foreign countries. In addition to this society, which has no particular advantages of its own in view, and only aims at promoting the public interest, another company is now being constituted, which will itself carry on an export trade. Another company has been instituted at Ulm for commerce with the East. The export society mentioned above has already sent a number of engineers to the seaports of Greece and Asia Minor, with a view of ascertaining in what manner the commerce with those parts may be promoted.

SCIENTIFIC AND ART NOTES.

A new arrangement of filter removing calcareous deposits from water, in which the water is passed through a succession of filters, worked in series, filled with sawdust, impregnated with magnesia, has been described. Salts of magnesia thus replace those of calcium, and, being more soluble, form no scale in boilers.

* * * *

A resolution of the Government of Bengal lately issued summarises the results of the recent Exhibition of Indian Art Manufactures at Calcutta. The number of articles exhibited was 4,873 (amounting in value to 127,807 rupees), and of these Bengal sent 2,560 and Madras 1,135. The lessons taught by the exhibition are that the silk manufacturing industry is languishing in Bengal; that Dacca maintains its pre-eminence in muslins; that the carpets made in Northern India show in many cases signs of careless work, though their general excellence is admitted; and that the pottery produced by the Madras School of Art is excellent both in design and manufacture.

* * * *

An important experiment is about to be carried out in London, namely, the establishment of works to supply hydraulic power over a large area, for the working of cranes, lifts, and other machinery. The General Hydraulic Power Company, Limited, which is being formed to carry out this experiment, as well as to carry out similar undertakings in large towns, has just obtained an Act of Parliament. authorising the supply of hydraulic power in London over an area extending from Blackfriars Bridge to the Tower on the north side of the river, and to the Surrey Docks on the south side, the Company being empowered to lay all necessary pipes, and to take, for a nominal term of payment, 1,000,000 gallons of water daily from the Thames. The district thus secured is certainly a most important one, containing as it does a great number of wharves and warehouses, where hydraulic power can be well turned to account. It is also proposed to employ the hydraulic power to drive electric light machinery. It is proposed at first to lay about ten miles of mains and to erect hydraulic pumping engines of 500 horse power provision being of course made for future extensions.

* * * *

Considerable attention has for many years past been given to the means of rendering wood and other substances uninflammable and with varied success. The latest attempt in this direction is that of Herr B. Hoff, Professor of Chemistry at the Royal and Imperial Technical Academy at Jaroslav, Galicia, who for some years past has devoted himself to a study of the subject, and has recently succeeded in effecting this object. What the means are by which the result is attained we are not informed, except that it is a simple and inexpensive chemical process. and that the materials consist of the cheapest factory waste. Wood thus treated, when submitted to a high temperature, neither produces flame nor attains a great heat. Samples of wood so treated have been submitted to the action of a gas flame, with the result that the wood neither burst into a blaze nor became red hot; it simply gave off a light smoke and the surface became coated with a thin film of fine black powder, the result of its carbonisation. Should a practical trial on an extended scale lead to equally good results, it would follow—other things being equal—that we shall possess a very efficient means of protecting the timber portions of our dwellings and other structures against ignition, should a fire occur.

ORIGINAL DESIGNS.

Our first plate is a design by Mr. J. G. Bowins, 68, Mawson Street, Manchester, for a Muslin Curtain. It has been drawn specially for shuttling. The ground of the body should be of a light shade, and the dado of a dark one. The guards, outlines, &c., may be in Olive Green, and the ornament an arrangement of Orange, Light Blue, Pink and Yellow.

* * * *

The second plate is a quaint sketch by Mr. Hoyle, of Mount House, Great Malvern. This design is simply intended as a suggestive idea, which will perhaps be found most useful to manufacturers of Silk Damasks.

* * * *

*** We beg to inform manufacturers and others that adaptations of designs, published in the "Journal of Fabrics," can be made at the Office by experienced Designers, and that Original Designs can also be furnished at moderate charges.

* * * *

Numerous inquiries having been made for back numbers of the Journal, we beg to inform our readers that all the numbers from the commencement to February are out of print. We have however reprinted our designs and have a stock of 18,000 copies on hand, which we shall be happy to supply in the order in which they were originally published, at 6d. per set, each set representing one month's issue.

MONTHLY TRADE REPORTS.

Wool.—In London the wool trade has been rather quiet, buyers preferring to await the result of the ensuing sales, which commence on the 22nd inst. About 400,000 bales will be catalogued. In Glasgow and Edinburgh considerable activity has characterised the markets during the past month. The principal fairs being held during July, buyers naturally attended in large numbers; in consequence, a very lively demand has taken place, but without any great advance in prices. At the auction sales at both the above named places a large proportion of the wool offered was knocked down after spirited biddings. In Bradford and Halifax buyers still show an indisposition to purchase beyond their actual requirements, consequently the market bears a quiet aspect. The English descriptions of wools have been slow of sale at the old rates, but the Colonial wools meet with a fair sale and prices keep steady. In the cloth districts, an average quantity of wool has gone into consumption. The yarn and piece trade have been quiet, a few merchants and manufacturers have done a fair business, but this is not the general order of things. Fine Botany yarns have met with most favour. Prices on the whole are maintained.

Cotton.—In the raw material the demand has varied considerably during the past month. The changing phases of the Egyptian difficulty have affected the market in a great degree. Prices have in consequence varied until towards the latter part of the month when a rise in Egyptian equalling ¾d. per lb. took place, the general descriptions rising ⅛d. to ½d. per lb. according to the qualities, &c. In the manufactured articles a very dragging business has been done, spinners have not reaped the advantage they expected from the excited state of the market; and manufacturers find it impossible to procure adequate remuneration for their goods, the prices offered being out of all proportion to those of the raw material. The Continental markets supply orders in but limited quantities, and the demand for the Mediterranean has been considerably interfered with, owing to the state of politics in the East. The home trade has been in a weak condition, the demand being below the average, at prices the reverse of satisfactory. Stocks generally have accumulated.

Woollen.—Trade in Leeds and Huddersfield has been of a fairly active character, the machinery being kept well employed. The export business is steady, an average demand being kept up; the American markets taking above the average quantities of goods. For the home trade, low priced goods are being sold in large quantities, but the medium and better qualities are slower of sale. In the heavy woollen districts business has been of a satisfactory nature, a fair demand taking place all round Prices are well maintained, although they are not so satisfactory as manufacturers could wish.

Linen.—There has been a steadier tone pervading the market during the past month, prices being well maintained and a slight advance having taken place in some classes of goods. More looms are being employed which indicates an improved state of things, still many manufacturers complain of the unremunerative business, owing to the rise of the raw material following immediately after the market for the manufactured article improves. In jute goods an improved demand has been experienced at former rates.

Carpets.—The trade has been in a rather unsatisfactory condition; few orders have come to hand either for the home or foreign markets. Many firms are now preparing patterns for the ensuing season, but prices have not yet been finally fixed. The opening of the Worcester Exhibition, at which some of the leading manufacturers of carpets are exhibiting, it is hoped, will stimulate the trade by bringing before the notice of both merchants and users this branch of the textile fabric manufacture.

Lace.—The lace trade has remained in the same state as was stated in our last report; neither the home nor the foreign element of the business has improved to any appreciable degree. Prices however are fairly well maintained. In the silk department an inactivity is displayed which is rather disheartening, the demand being very limited. The curtain branch exhibits a want of animation. The market for the raw materials has been quiet but prices keep firm.

"Owen Jones" Prizes, 1882.

This competition was instituted in 1878, by the Council of the Society of Arts, as trustees of the sum of £400, presented to them by the Owen Jones Memorial Committee, being the balance of the subscriptions to that fund, upon trust to expend the interest thereof in prizes to "Students of the Schools of Art" who, in annual competition, produce the best designs for Household Furniture, Carpets, Wall Papers, Hangings, Damask, Chintzes, &c., regulated by the principles laid down by Owen Jones. The prizes are awarded on the result of the annual competition of the Science and Art Department.

Six prizes were offered for competition in the present year, each prize consisting of a bound copy of Owen Jones's "Principles of Design" and a Bronze Medal

The following is a list of the successful candidates:—

1. Thomas E. Doran, School of Art, Macclesfield, design for Silk Hangings.
2. James Meine, School of Art, Kidderminster, design for an Axminster Carpet.
3. Thomas Linnell, School of Art, Leicester, design for Tapestry Hangings.
4. Alexander Park, School of Art, Glasgow, design for a Carpet.
5. John Sykes, School of Art, Leicester, design for a Wall Paper.
6. Frank E. Adams, School of Art. Macclesfield, design for Furniture Silk.

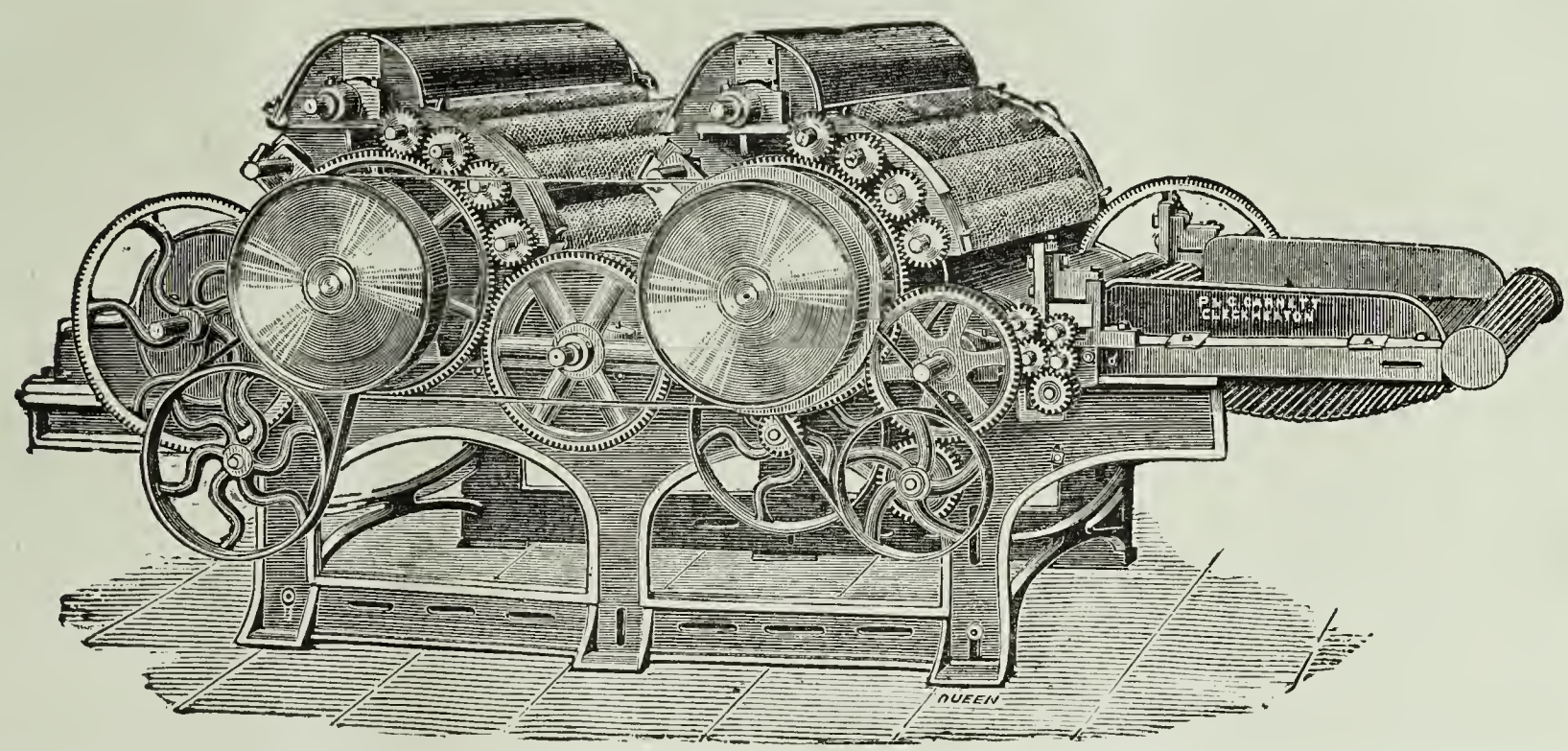
The Madrid Tapestry Works.

The building in which the Madrid tapestry is made, just outside the Bilbao gate, near the Ronda Santa-Barbara, is about to be pulled down, and a new factory will be constructed not far from the Atocha church. This building dates from the reign of Philip V., who had it erected after the model of the Paris Gobelins, and the first directors of it were the Flemish artists, Van der Gotten and his sons, the present director being a descendant of that family. There are about 200 workpeople of both sexes employed in it now, and it still enjoys a very high reputation for the skill with which tapestry is both made and restored there. At the present time a great many old pieces of tapestry belonging to private individuals are being restored there, and some of the most skilled workmen are copying in tapestry a series of pictures by Goya, which the King of Spain will present, when completed, to the Prince of Wales. The Spaniards have always been very fond of tapestry, and some very fine specimens of the Spanish and Flemish work may be seen at the Escurial, the Royal palaces at Madrid and Aranguez, and in the palace of the Villahermosa family.

MACHINE "GARNETT"

For Opening Hard Twisted Woollen and Worsted Waste.

À ouvrir les laines fortement frisées et les dechets de laine.



These Machines are guaranteed to be of the very best quality, both as regards material and workmanship, and possess many recent improvements.

We beg to announce that we have just obtained

ROYAL LETTERS PATENT

For improvements in these Machines, whereby we are now able to put 14, 16, and even 24 rows of teeth per inch on to the cylinders, whereas formerly we could not exceed 12 rows per inch.

Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux.

Nous venons d'obtenir

UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu 'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu 'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, Sole Patentees, Cleckheaton, Yorkshire,

WHO ARE ALSO MAKERS OF

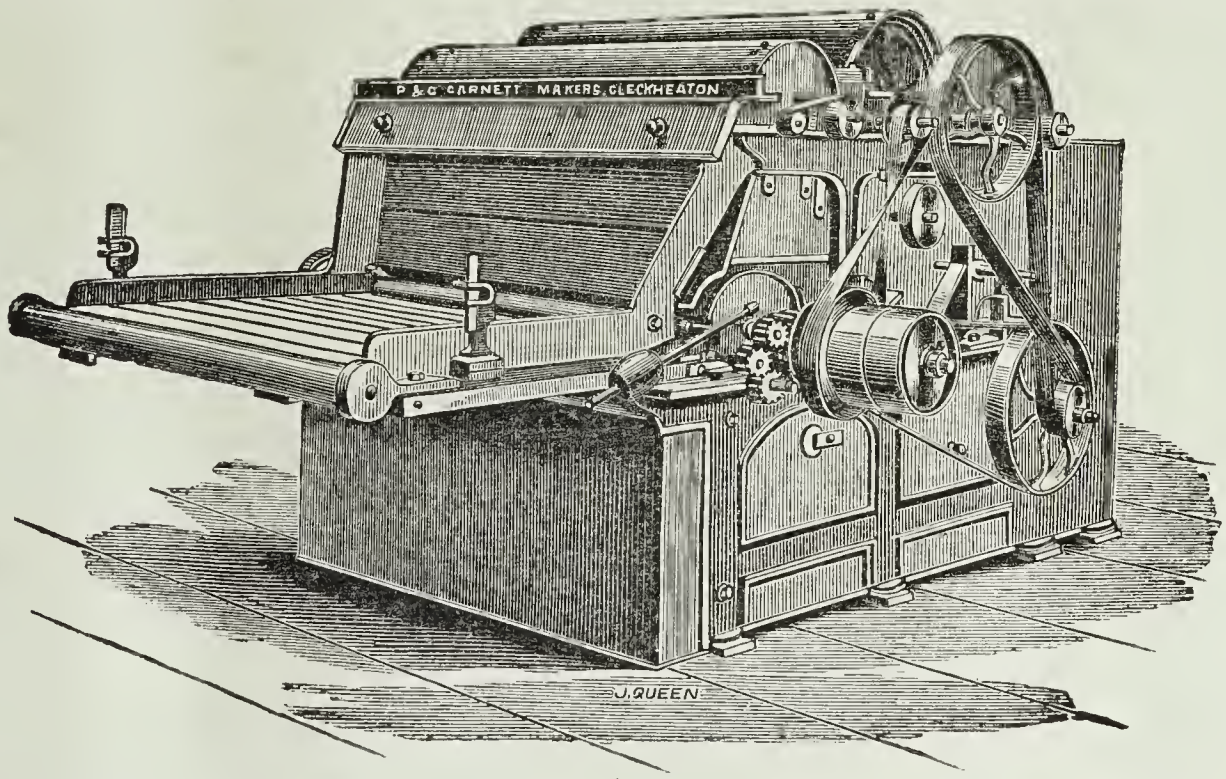
GARNETT'S PATENT COTTON GIN,

Unequalled for fast Seed Cotton.

NOUS CONSTRUISONS AUSSI

L'EGRENOIR BREVETÉ DE GARNETT

Sans rival pour la préparation des cotons á graine dure.



IMPROVED WOOL CLEANING AND BURRING MACHINE,

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and

TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

Stalybridge, May 9th, 1877.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than *twenty years*, and am very much pleased with the working of it. Its advantages are that it is much *cleaner* and *less costly* than leather or any other covering.

LA MACHINE PERFECTIONÉE À NETTOYER ET ÉCHARDONNER LES LAINES,

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construison aussi

LES CARDES MÉTALLIQUES BREVETÉES DE GARNETT,

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée

LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

Stalybridge, 9 Mai, 1877.

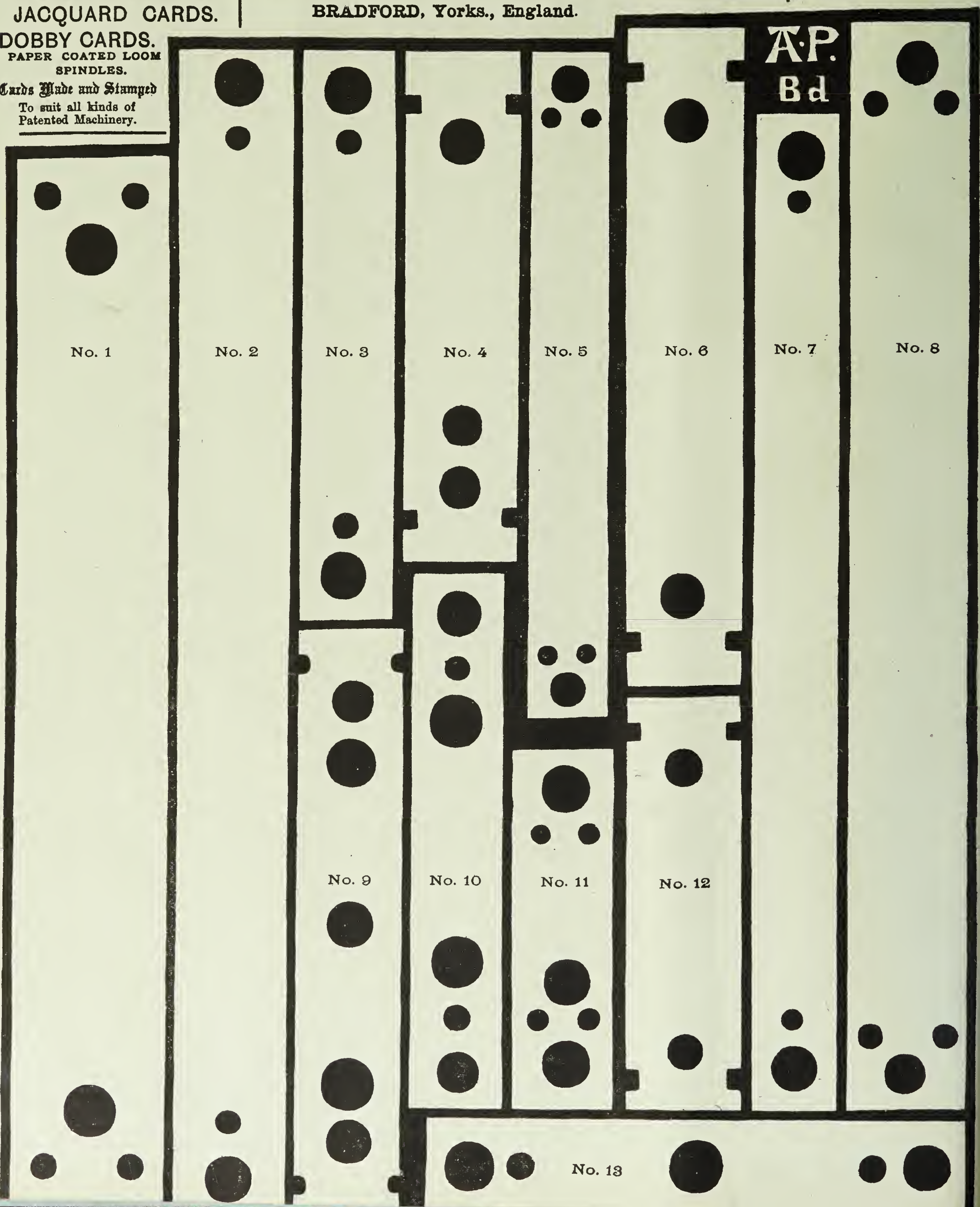
En réponse à votre lettre du 7 ct. j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

Manufacturer of
HARD BLUE
CIRCULAR BOX CARDS.
Hodgson's Shedding Motion Cards.
JACQUARD CARDS.
DOBBY CARDS.
PAPER COATED LOOM SPINDLES.
Cards Made and Stamped
To suit all kinds of Patented Machinery.

THE WEAVING CARD MANUFACTORY.
ANTHONY PYRAH,
ST. THOMAS' PAPER WORKS,
ASHTON STREET, CROPPER LANE, OFF THORNTON ROAD,
BRADFORD, Yorks., England.

Cards Cut Plain or Stamped, with Peg and Lace Holes as below, without extra charge.
Card Board supplied in Sheets to any size or gauge.



E HOYLE

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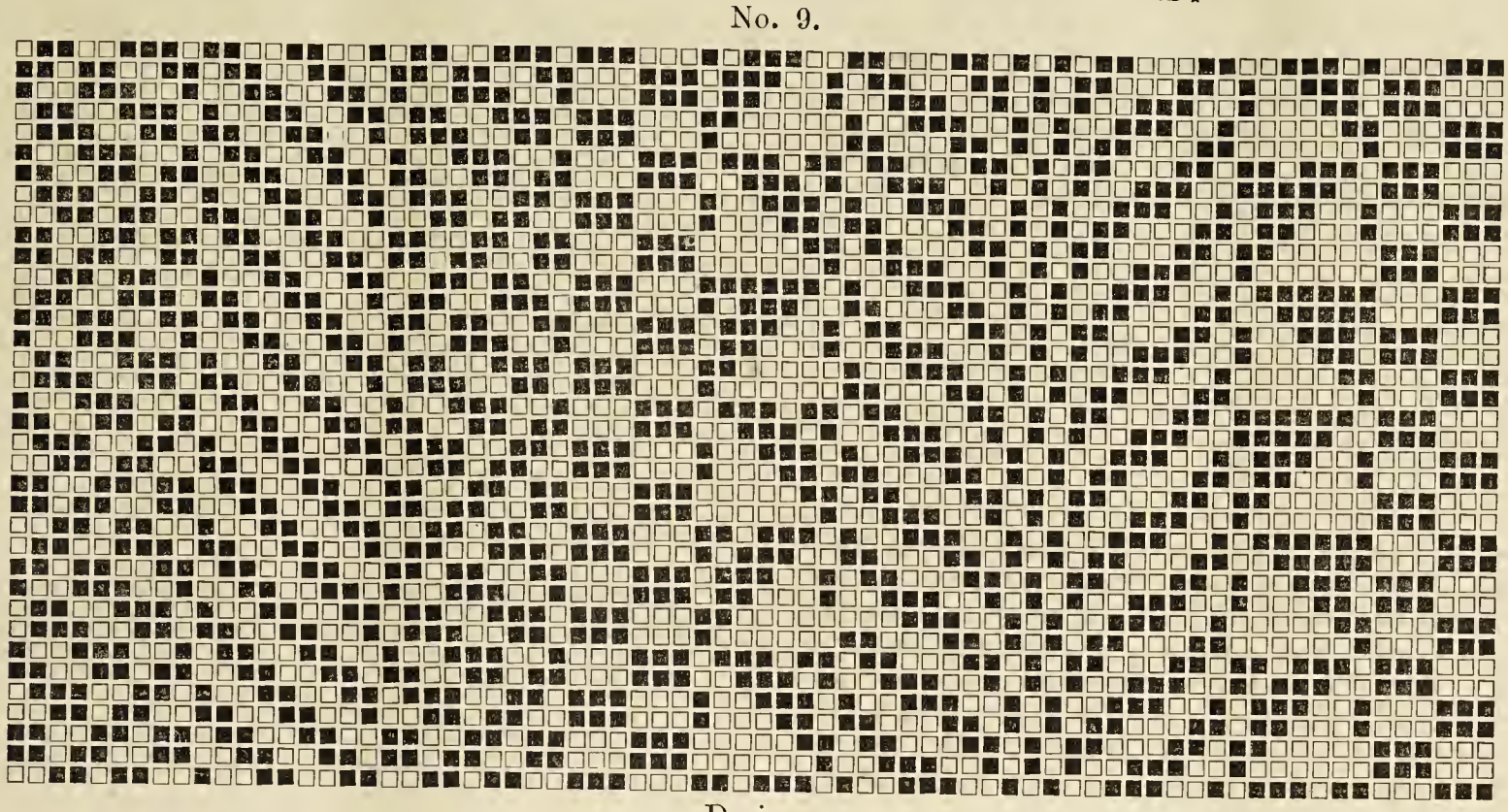
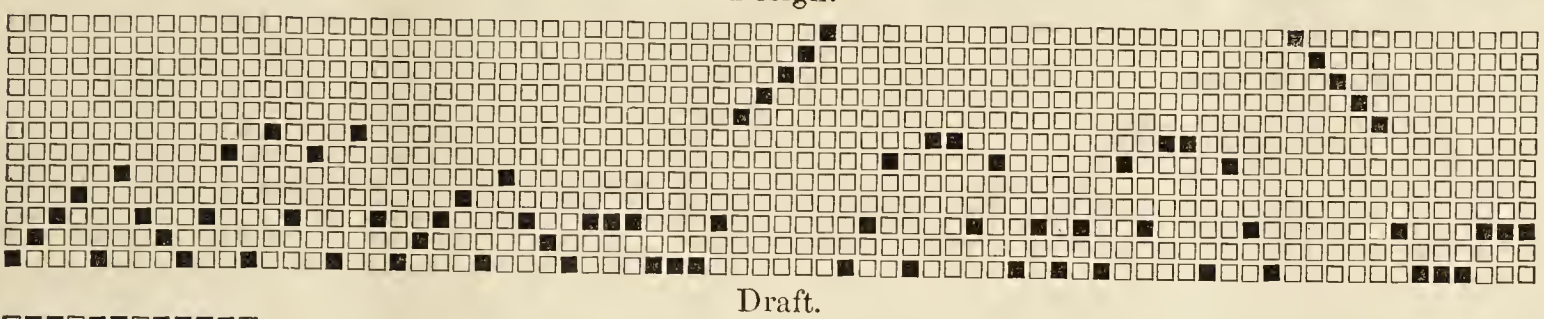
ORIGINAL COATING DESIGNS.

No. 9.



Design.



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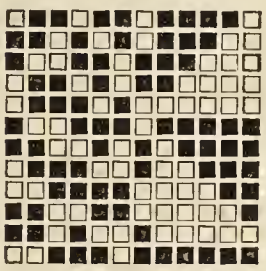
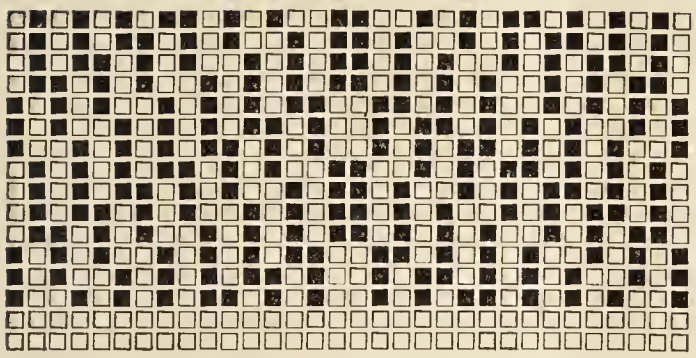


Pegging Plan.

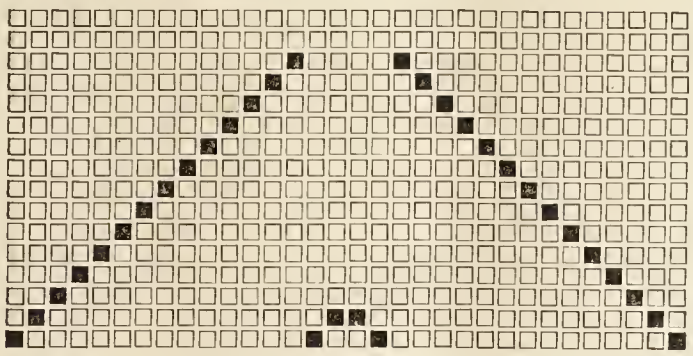
Pattern No. 9 is a Combination Stripe for a WORSTED COATING. It is a 72-end Pattern, drafted to weave with 12 shafts.

No. 10.



Design.

Pattern No 10 is a 32-end Striped Cork Screw Pattern drafted to weave with 14 shafts.



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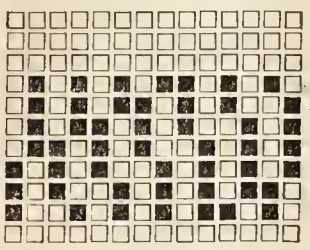


Pegging Plan.

Manufacture of Mixture Yarns.

In the manufacture of yarns composed of wool or fibres of different colours and known as mixture yarns, the object has generally been to secure a perfect and complete admixture of the variously coloured fibres, so as to avoid the irregularities and imperfections of mixtures resulting in what are known as "spears," but this desirable aim has not invariably been successful. The process of the manufacture of such yarn is generally carried on by arranging the slivers, say, three of black and two of white, side by side, and the ends of these are passed into the gill box, afterwards to a second gill box, and thence to a doubling frame, and so on to the opening frame. In all these processes the draught has been from the ends of the fibres, which, as supplied to the gill boxes, lay side by side, and therefore the various colours have not become thoroughly mixed and blended, the result being a more or less cloudy yarn or piece. According to an invention which received provisional specification only, an improved method of manufacturing mixture yarns runs as follows :—

The slivers of different colours are wound on bobbins or other receptacles suitable for feeding a combing machine, having revolving or travelling main combs, on to which the ends of the slivers or into the nipping and detatching jaws of which the ends of the slivers are fed, and from which tufts are successively detached. "It will be seen" says the patentee, "that if tufts were detached from, say, four slivers, two of white and two of black, and then deposited upon a travelling comb, that before other tufts could in like manner be detached and deposited the comb would have moved, and its position would be changed; and the second deposit would not be in like order in relation to the first tufts, black and white would be laid one upon another, and by the drawing off rollers become mingled and draughted one with the other, and in the subsequent operations of gilling, doubling, and spinning become thoroughly incorporated and mixed, producing yarn and pieces entirely free from spears or other irregularities of shade or colour."

The Ribbon Manufacturing Industry.

A late number of a contemporary gives some interesting figures respecting the ribbon manufacturing industry. It states that the production of ribbons by the countries giving the most attention to that industry from the year 1872 until 1881 increased or decreased in value as follows :—

	1872.	1881.
France	$24,602,000	$25,000,000
Germany	14,000,000	12,000,000
Switzerland	13,000,000	11,000,000
Austria	4,400,000	3,000,000
England	4,000,000	4,000,000
Italy, Spain, Portugal, Belgium, Russia, and Turkey	2,000,000	5,000,000
United States	—	16 000,000
Totals	$62,000,000	$76,000,000

The increase of the product in France is believed to be apparent, rather than real. The advance since 1872 is small, and, leaving the United States out of the list, there would be shown an actual falling off in the value of the European product amounting to 2,000,000 dols. The growth of the American trade has told seriously on the French industry. In 1871 France sent to the United States velvet ribbons valued at 1,756,732 dols. : in 1881 French ribbon exports to the United States were valued at but 18,413 dols. Of lustering ribbons France exported 2,430,637 dols. worth in 1872, and in 1881 only 713,335 dols.

The Russian Tariff.

A statement of the changes introduced into the Russian Customs Tariff has been issued by the Board of Trade. The following particulars relating to textiles are given :—

No of Article	Description of Goods.	Unit.	Former Duty. rbl. cop.	New Duty. rbl. cop.
24	Fibrous vegetable substances used in a raw state :—			
	(1) Cotton, raw	,,	0 44	0 45
	(2) Jute, raw	,,	0 40	0 40
	(3) Flax and hemp, combed or not combed; flax and hemp combing; wool of fir tree spines; New Zealand flax; vegetable hair; Manilla hemp; fibre of nettles and other vegetable substances used as substitutes for flax and hemp in their raw state	,,	free	free
	Silk waste (bourre de soie) not carded; silk sweeping of every kind, and cocoons	,,	,,	0 22
88	Hemp and flax yarn of every kind, and yarn of jute	,,	4 0	4 40
	Observation.—Thread of jute and hemp pay duty under § 92, pt. 3.			
89	Silk :—			
	1. Raw and silk waste, or bourre de soie, carded, silk wadding dyed or not dyed	,,	0 55	0 55
	Observation.—Uncarded silk waste, silk sweepings of every kind, and cocoons are admitted under § 26, pt. 8.			
	2. Twist, tram, and organzine, and wound for woof or warp, as also sewing silk of all kinds, and yarn of bourre de soie or silk waste, with or without admixture of wool, cotton, or fine hair :—			
	a. Not dyed	,,	4 95	8 0
	b. Dyed and printed	,,	5 50	16 0
90	Wool and fine hair of every kind :—			
	1. Raw, washed and unwashed, not dyed, also flock, wool, and wool combings, not dyed	,,	0 22	1 0
	2. Wool, not spun, of every kind, dyed, also artificial wool (kunstwolle, shoddy, mungo, laine renaissance), cloth shearings of every kind, and wool combings dyed	poud	0 48	2 0
	3. Combed in rolls :—			
	a. Not dyed	,,	0 48	3 0
	b. Dyed	,,	0 48	4 50
	4. Wool and fine hair of every description spun, mixed or not with cotton, flax, or hemp :—			
	a. Not dyed	,,	4 95	7 50
	b. Dyed	,,	4 95	9 0
91	Cotton wadding carded and gummed in sheets	,,	1 21	1 20
	Note in former Tariff omitted.			
92	Cotton yarn :—			
	1. Lower numbers to No. 45 (English designation :—			
	a. Grey	,,	3 57½	3 60
	b. Bleached and dyed (excepting yarn dyed Adrianople red)	,,	4 67½	4 70
	c. Yarn dyed Adrianople red	,,	4 67½	5 0
	2. Yarn from No. 45 upwards :—			
	a. Grey	,,	3 57½	5 0
	b. Bleached and dyed	,,	4 67½	6 0
	3. Sewing and knitting threads of every kind	,,	From 3 57½ to 4 67½	6 0
188	Cables, rope, and twine of hemp, flax, flax or hemp tow, New Zealand flax, (Phormium tenax), and of other vegetable fibrous substances, tarred and not tarred, also fishing nets	,,	0 44	0 44
	Observation.—Cords, twine, &c., with admixture of silk, wool, silk waste, or cotton pays, as gallons, braids, &c., according to the material of which made.			

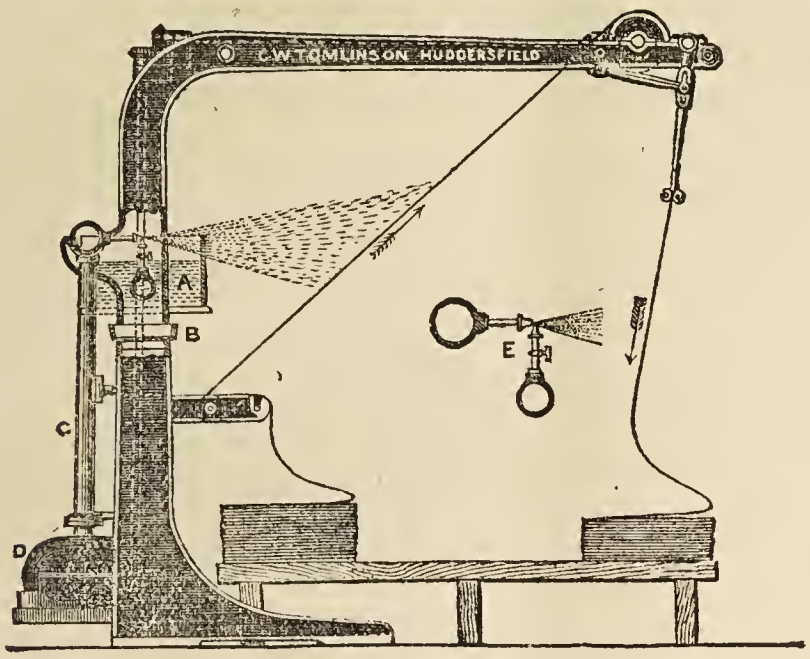
(*To be Continued.*)

The Bradford Fine Art and Industrial Exhibition.

(SECOND NOTICE.)

Messrs. J. & W. BIRKBY, CARD CLOTHING & LEATHER BELTING MANUFACTURERS, LIVERSEDGE, YORKSHIRE, are well to the front with an exhibit on Stand No. 14 in the Gallery Annexe. It comprises a number of cases containing specimens of single and double leather beltings, and various kinds of card clothing; the whole being so admirably arranged, that the various points in the different articles are apparent to the observer at a glance. Amongst the numerous samples of leather belting, there are some excellent specimens of wire-sewn double beltings which are made in widths from 10 to 56 inches, and which are capable of transmitting from 75 to 500 indicated horse-power according to their width and strength. One example deserves special mention—it is of a superior order, being made of the best English bark tanned leather, wire-sewn, 44 inches in width, and is equal to driving 450 horse-power. In addition to this the double belts for use in carding, spinning, and drawing machinery shew great merit, and will bear the closest inspection. They are light wire-sewn belts, being made specially for the running of the above named machinery. Two or three specimens of composite double belts of varying widths are also shown, which are excellent samples of good workmanship. Amongst the single wire-sewn belting is one specially adapted for the strippers of woollen, and worsted carding machinery. In addition to the examples enumerated, there are some specially prepared waterproof belts for use in wet spinning, dye works, bleach works, &c. Messrs. Birkby guarantee that this belting is not affected by moisture, nor by any change in the atmosphere, and is impervious to both steam and water, and that it will be found to work equally well in both. It is therefore specially recommended for all purposes where work in the open air is carried on, and where there is an exposure to atmospheric changes; taking into account the superior quality and greater durability of the leather, the cost of the belting will, we believe, be found to be moderate. The whole of the beltings are guaranteed to be made of the best English bark tanned leather. The specimens of card clothing are very numerous, the various samples being for woollen and worsted; flax, tow, jute, and other strong fibrous material. Those for woollen and worsted carding machinery are of especial interest. By an improved system of covering the fore-part of woollen and worsted carding machines, with needle pointed wood card clothing, (set with hardened and tempered steel pins), Messrs. Birkby maintain from practical experience that the cards possess a double advantage—reduced expenditure and increased efficiency; also that they will resist without injury what would otherwise seriously damage the ordinary make of cards, and possessing a polished taper point, they not only manipulate the material with greater effect and less injury to the fibre, but pass it on to the cylinder in a state which enables the cards on the remaining portion of the machine to wear very much longer than the average time especially when employed on coarse work. In addition to the above described woollen and worsted cards, there are some fine samples of iron and brass faced card filletings for flax spinners and others. The great success which has attended their introduction and caused them in numerous instances to supersede "leather" filletings is due principally to the fact that whilst retaining all the essentials of the latter, they possess the following additional advantages :—First—Being faced with iron they will not stretch, consequently do not get slack on the roller, thus preventing what has often been the cause of serious accidents to carding machines. Second—Possessing a highly polished surface, it will not retain dirt, thereby saving time unavoidably lost in removing the same. Third—In cases of fire they will resist without damage what would render leather completely useless. Fourth—From the mode of their construction, they not only wear longer, but cost considerably less than cards made of leather. The advantages enumerated ought to bring this card into great favour. The whole of this firm's exhibits are of a high order. The material used is of the best possible quality, the cards for the woollen and worsted machines especially being of unexceptionable value; their term of durability is guaranteed to be considerably above the average, and the workmanship shows that skilled labour of no mean order is brought to bear in the production of the various articles manufactured by Messrs. J. and W. Birkby. The whole of this display, we are sure, will commend itself to the notice of the textile manufacturers, being of considerably more than average merit.

MR. G. W. TOMLINSON, MACHINIST, ENGINE BRIDGE WORKS, HUDDERSFIELD, exhibits a patent damping machine for use on woollen cloths. There are at the present time several modes of "dewing" woollen cloths in vogue amongst manufacturers, one of which is the winding of the piece in folds of wet canvas, the cloth absorbing a certain percentage of water from the canvass, and another by means of a brush partially submerged in water, which revolving at a high speed, breaks the water once or twice against the sides of the trough, causing a spray to fall upon the cloth; but unfortunately these expedients fail to make the damping even over the entire surface of the material, and in consequence it is apt to become cloudy. Mr. Tomlinson, in bringing this damping machine before the notice of manufacturers, will undoubtedly secure their attention, as it is really a necessary adjunct to a good finishing plant. The machine (an illustration of which is given) is generally made 72 inches in width, but the size may be varied in accordance with the wishes of the user. The maker claims that a perfectly regular and even film of water can be thrown upon the cloth, which can be varied in degree from 4 oz. in a piece of 40 yards long, up to 6 lbs. for the same length; one especial advantage being secured, that the same amount of dampness can be obtained at any future time, which to the makers of fancy cloths should prove of the utmost value. The machine will damp from 15 to 20 ends of cloth per hour. In order to give an idea of the working of the apparatus, we draw attention to the engraving.



A is a cistern containing water; B a trough to receive waste water; C is a vertical pipe conveying a blast from the fan D. This pipe is connected with an horizontal pipe kept charged with air at a high pressure. An enlarged view of the two pipes is shewn at E; the lower one is charged with water from the cistern A, and the blast of air from the horizontal pipe, blowing over the top of the vertical, causes a vacuum; the water in consequence rises, and is blown away on to the piece in the form of spray. Taps are supplied to the horizontal pipes, which allow of both broad and narrow cloths being damped on the same machine. The space required for the apparatus is 8 feet by 9 feet. The maker claims that goods operated upon by this damping machine are very much improved by the process, that they are firmer, yet feel softer to the touch, and that they present more the appearance of goods damped by the London Cloth Workers. Perhaps the best testimonial that could be given in its favour would be to state that during the past 2½ years between sixty and seventy of the machines have been supplied to firms at home and abroad.

MESSRS. P. & C. GARNETT, MACHINISTS, CLECKHEATON, YORKSHIRE, occupy a large area in the Technical School, in which they are exhibiting one of their waste openers, or as they are generally known, "Garnett" Machines. The one now on view is of large proportions, and as a specimen of solid and practical workmanship, ranks in merit with any display in the building. The machine is 60 inches wide, and has three swifts, each of which is 30 inches in diameter; three doffers of 24 inches; three fancies of 11 inches; and three strippers of 6 inches diameter. It is cut with 12 rows of teeth on the first and second parts, and 16 rows per inch on the third part. Its weight is not less than 7½ tons. The whole of the material used in the working parts is of the best possible quality. Messrs. Garnett guarantee that the machine will convert about 500 lbs. of hard twisted Scotch tweed waste into carded wool, in a working day of 10 hours. In order to give such of the visitors as are interested in the machine an opportunity of judging of the amount and quality of the work done by the waste opener, a man is in attendance who will be happy to pass samples of hard twisted waste through it at any time, as it is continually in motion throughout the day. Perhaps it will not be amiss if we draw the attention of our readers to the two swift "Garnett" illustrated opposite page 18, which of course will be seen is a much smaller waste opener than the one above described. In our next issue we shall probably have to describe other exhibits of this firm, as we understand that they intend fixing a small single waste opener for such waste as has not much twist in it, and also a burring machine for removing burrs out of wool, this latter machine cannot fail to command the attention of a large circle of manufacturers, &c, when we take into account the fact that the importation of burry wool is yearly on the increase. Messrs. Garnett fully intended having both the small waste opener, and the burring machine on view a month ago, but owing to an immense press of orders they have been unable to construct them, but hope that in the course of a few days they will be able to place them before the visitors to the exhibition.

MR. A. FLATHER, JACQUARD MACHINE MAKER, WEST END WORKS, RICHMOND ROAD, BRADFORD, who stands in the first rank in Yorkshire as a jacquard machine and harness maker, shows an extremely fine example of his manufactures: it is a 300 double lift jacquard which is at work on a loom weaving silk pocket handkerchiefs. It has all the latest improvements, and shows in the actual working that it can be run almost as quickly as a plain loom. The cloth produced by this jackuard is in every respect considerably better than that woven by an ordinary single lift jacquard, the pattern being especially distinct and even throughout. Mr. Flather also exhibits a 1200 single lift jacquard of excellent quality, specially adapted for weaving damasks, table covers, and other similar goods; and also a 300 single lift jacquard, which to manufacturers of dress and other goods made in Bradford and district, should be of more than ordinary interest. In addition to the above, a number of looms at work in the Exhibition are fitted with jacquard and harness, amongst which may be mentioned the looms belonging to Mr. T. Stevens, of Coventry, and which are 100 single lift jacquards, and are weaving neck-ties and various other silk goods, and the loom that is weaving the pattern designed by Mr. T. Ashenhurst, head master of the Technical School, and which commemorates the opening of the Exhibition. This latter loom is fitted with two 900 single lift jacquard and harness, and is weaving the design at the present time admirably. Mr. Flather also shows an improved 300 jacquard stamping machine for card cutting. It is, in workmanship and in practical operation, of great merit, and shows to users of such machines the value of securing an article which we think could not fail to give satisfactory results to the buyer, owing to the regularity and the great facility with which it works. At the West End Works, in addition to the exhibits already enumerated, Mr. Flather makes repeaters, index machines, dressing gear and yarn reels. We cannot avoid impressing upon manufacturers the importance of carefully surveying this exhibit, comprising as it does such excellent specimens of practical workmanship.

MR. WILLIAM HANSON, ENGINEER, QUEBEC WORKS, THORNTON ROAD, BRADFORD, exhibits some improved steam pumps, suitable for feeding boilers, pumping water for all purposes, and are excellent appliances as steam fire engines. They have been specially designed to obviate the many evils that exist in numbers of pumps made at the present time. The mechanism is arranged in a very compact manner, every working part being reached without the slightest difficulty in case of repairs. The exhibit includes an improved horizontal steam pump, which is of a superior class. It is fixed in a firm manner to a strong cast iron bed, which is so arranged that should any leakage take place from the stuffing boxes, the water is immediately caught and drained away. All the glands and stuffing boxes are bushed with brass, and to prevent breakages which frequently occur in ordinary pumps, the crank shaft is made much stronger than is usually the case. The necks are made very large, to prevent wear and tear. The valves all work vertically, and are made the same size as the pump plunger on the suction side. Another pump, an illustration of which may be seen opposite page 13, and which was fully described in a former issue, is also horizontal, the mechanism being very compact, and every working part being as easily reached as in the one described above. The glands are either made of brass or are lined with that material, and the suction valves are made large enough to ensure the pump giving satisfactory results. The arrangement for carrying off leakage is similar to above. It is especially adapted for steam fire-engines, the buckets being lined with brass, and the working parts being of the same metal in order to prevent corrosion. It is also suitable for colliery deep lifts, water ballast, irrigation contractors, and chemical purposes. The steam cylinders are made of such a capacity that in case the pressure of steam falls as low as 20 lbs., the pump will work and give a pressure of 90 lbs. per square inch on the hose pipe, which is, we think, a very satisfactory result, and being as great as the best hose pipes should be subjected to when in regular use. They are guaranteed to give a stream of water as regular and steady as the town's mains. As an ordinary pump for pumping water, this exhibit undoubtedly ranks in respect of efficiency, with any in the market. Mr. Hanson, who as a thoroughly practical engineer, has had great experience in improving and manufacturing these pumps, also makes a number of patent specialities, including the following:—Water purifiers for steam boilers, water heaters for non-condensing engines, steam interheaters for compound engines, steam dryers, steam traps, steam reducing valves, three-cylinder engines, and a patent for utilising steam for non-condensing engines.

MESSRS. S. HALEY & SON, CARD MANUFACTURERS, CLECKHEATON, YORKSHIRE, occupy a stand with a very important display connected with the manufacture of cards for the worsted, woollen, cotton, &c., industries. Instead of concentrating their efforts in producing a few specimens of cards in the finished state, they prefer to place before users the articles in their different processes of manufacture. They commence first with the billet from which the rod is rolled, and then give the wire in the different stages from the rod to the finest tempered wire used in card making. In thus putting their exhibit before those interested in this department of textile trades, they are bound to excite the interest of the practical manufacturer, who, we are sure, cannot fail to perceive the merits of this firm's display. Of more than 80 specimens shown, 50 appeal to the home trade, and the remainder to the foreign element of the industry. In the manufacture of their cards, Messrs. Haley & Son have, after making a great many practical experiments, fully proved that by the use of hardened and tempered cast steel, in the manufacture of the wire used in their cards (which steel is prepared by a process that is patented) they secure advantages in the wear and tear of the cards which are of the greatest benefit to the user. These advantages have only been secured after many trials and at considerable expense. Not many years ago steel wire cards were condemned by many—not only by makers but also by users—as being in actual use inferior to the ordinary iron wire cards; but the persistency with which this firm pushed the steel cards on the market, and the success which followed their use, has proved their great utility, and has placed Messrs. S. Haley & Son in the front rank as card manufacturers. To show the difference between the ordinary iron card and that of steel in wear and tear, Messrs. S. Haley & Son exhibit

an angle stripper roller in which both kinds of cards were used. We are told some three years ago Messrs. Hoyle and Harrison, yarn spinners, Bramley, Leeds, instructed one of their card-nailers to cover a roller with three sheets of steel wire cards, but by some mishap a sheet of iron cards was fixed along with the two steel cards, with the result that after being in use until a few weeks ago, the iron card has been rendered entirely useless, while those made from the steel wire are still straight and firm and in good working order. The specimens of finished cards, include some made specially for the Bradford, Halifax, Leeds, Dewsbury, Huddersfield, and other worsted and woollen centres, and also samples of various kinds for the cotton industry. In the manufacture of these samples, the practised eye of the overlooker or his master will see that Messrs. S. Haley & Son have used only the very best material procurable, and have seconded that by skilful workmanship, and further enhanced their style and quality by the machine on which they are set. The machines on which these samples are made, are fitted up with some important improvements (which have been patented by the firm), and one of which consists of a stop motion, that prevents any irregular wire going into the foundation stops the machine if the teeth are not the right length, or the right bend, and should any of the feed motions get out of order, this motion comes in again to play its part as the policeman of the machine, and stops it, thus preventing any irregularity whatever. This advantage will be greatly appreciated, as to a very great extent upon the evenness and regularity of the cards depends the success of the work that has to follow when they reach the textile manufacturers' hands. This firm is the sole maker and user of this valuable stop motion, which must give them an advantage over makers of cards using inferior machines. In addition to the above described articles, there are two card clothing setting machines exhibited, which are working daily, one upon a foundation of cloth and felt, and the other doing work suitable for the Bradford trade. In concluding this brief description of an exhibit which is so excellent in point of merit, we cannot refrain from expressing the opinion, that by placing such a comprehensive display before the notice of the textile trades, the exhibitors will maintain the reputation which has characterized them for some time past as being one of the leading firms of their industry in this district.

J. B. FARRAR, WORSTED MACHINE MAKER, GLOBE WORKS, HALIFAX, exhibits several novel and patent machines, amongst which will be found 2 patent positive stop motion twisting frames, one frame is fit up for any number of folds, taking a bobbin 6 inch traverse and 3 inch ends, and the other for 2 and 3 fold only; taking a bobbin 5½ inch traverse and 2¼ inch ends, both these frames are on the ring principle with patent spindles. When a thread breaks, or a bobbin runs out, the roller and spindle stop instantaneously; the perfection here attained in stop motion twisting is simply marvellous. It is applicable for twisting woollen as well as worsted yarns. It has been seen by many practical men, and all have acknowledged it to be the simplest and quickest stop motion in existence. Another machine exhibited by this firm is a Trap twisting frame for 2 fold yarns, the novelty in this frame is the positive driving of the trap boss or roller which has hitherto been driven by bands or friction, and yet, notwithstanding its being positive driven it will trap off easier when one thread breaks than when bands or friction are used. This frame is also fit up on the ring principle, with the patent rabbeth spindle, carrying a bobbin 5½ inch traverse, and 2¼ inch ends. The above kind of roller is applicable with equal advantage to either cap or flyer twisting In the course of a few days this firm will be exhibiting a novelty in ring spinning, and frames will be shown spinning both long and short wools, equal to flyer yarn and at donble the speed. Woollen yarns will also be spun on this principle. Spinners of worsted and woollen yarns ought by all means to make a point of inspecting these exhibits.

Mr. J. PARKINSON, MACHINE AND TEMPLE MAKER, CHESTER STREET, BRADFORD, in addition to a display of temples, a description of which was given last month, exhibits a lathe which certainly deserves the appellation of "Handy" which is applied to it. In the construction of this lathe the ordinary system of building has been departed from, and advantages have been secured which must prove of great utility in the turning and fitting of various articles. The principal feature is an improved arrangement for "gap." The "bed" is secured to the main casting by means of *one* bolt, and is made to slide horizontally to the right when its length requires an extension. The length may be extended to take in 16 inches between the centres, or to form a 10 inch "gap," the height of the centres being 3½ inches. When the "gap" is no longer required, or short work has to be done, the bed may be moved back the required distance, and fixed with a bolt in much less time than is necessary to take out and replace the ordinary "gap" piece. When used as a foot lathe, a greater differnence in the speed of the spindle can be obtained by a more uniform movement of the foot than in lathes of the ordinary construction. The driving wheel is fixed on the outside of the stand, having the cone overhanging to suit; by this arrangement the belt is changed with greater facility than when the wheel is inside the stand. Flat cones and belts are adopted, the latter being more easily replaced and repaired than round ones. In the making of the lathe the general convenience of the operater has been studied, so as to facilitate the manipulation and render it "Handy." The table is made of sufficient length to admit of the fixing of a screw parallel vice. This style of vice is adopted for general fitting purposes in preference to the lever grip vice, as it offers more convenience for miscellaneous work. In workshops where a number of fitters are employed the lever grip principle may be employed on certain kinds of fitting with advantage, but where only a very limited number is required, the style adopted for the "Handy" lathe is more serviceable. The lathe is mounted on a very neat stand for foot power, but where mechanical power is available, it can be supplied with overhead motion and bolted to any bench or gantry. The back centre is made to work by lever or hand wheel as ordered. The fittings of each lathe include wood and iron centres, turning rests, face plates, carrying pins, and three belts. For general light turning, drilling, &c., the "Handy Lathe" should prove a great acquisition to the artisan and amateur turner; especially as a guarantee of good material and first-class workmanship is given, in addition to the moderate price at which they are offered by the maker.

ODDS AND ENDS.

Mr. Fawcett has presented the bill to amend the Post Office Acts with respect to the conveyance of parcels. The object of the measure is to give legal effect to the system of a parcels' post recently settled between the Postmaster-General and the railway companies.

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Another addition has been made to the great canal schemes already before the world. According to a French paper, a company calling itself the Compagnie Generale du Nord has offered to construct a canal from 160 to 250 feet wide and 13 feet deep, from Boulogne to Paris. There is, of course, a wide difference between proposing such a scheme and finding the capital with which to carry it out.

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The Bavarian National Exhibition of Art and Industry, which has been held this summer in Nürnberg, has proved of much larger importance than was at first supposed. In one respect these local and national exhibitions have more interest than the larger international ones, for everyone is more concerned in the growth of art and industry in his own country than in any other, and this Bavarian one especially has revealed many capabilities of which the country was before unaware.

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A technical school is about to be established at Leicester, the main features of which will be to give instruction in the technology of spinning and the technology of framework knitting. The governors of the Wyggeston Schools have given £1,000 towards this object, the Science and Art Department, South Kensington, has promised £500. £1,000 has been raised by subscription, and another £1,000 is all that is required to complete the scheme for the present. The movement has been undertaken by the Chamber of Commerce and the Rev. Canon Vaughan.

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The annual statement of the trade of the United Kingdom for 1881 has been issued as a parliamentary paper. From this it appears that the total value of exports and imports for 1881 was £694,105,264, as against £697,644,031 in 1880, £611,775,239 in 1879, £614,254,600 in 1878, and £646,765,702 in 1877. The imports were £397,022,489 in 1881, as against £411,229,565 in 1880, £362,991,875 in 1879, £368,770,742 in 1878, and £394,419,682 in 1877; while the exports were £297,082,775 in 1881, as against £286,414,466 in 1880, £248,783,364 in 1879, £245,483,858 in 1878, and £252,346,020 in 1877.

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The *Times* Paris correspondent says:—The imports for the first six months of the year have amounted to 2,424,761,000f., and the exports to 1,744,175,000f. Last year's figures were 2,387,025,000f, and 1,548,738,000f. The imports show a diminution of 81,000,000f. in food, with an increase on all the other classes, while the exports exhibit a considerable increase in manufactures—namely, 911,000,000f., as compared with 806,000,000f. The prospect of a further diminution in the imports of grain, on which M. Léon Say counted two months ago, has, however, materially altered. An average crop is all that is now looked for.

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There is a weed in the South known as the wild coffee plant, which has caused the planters a good deal of trouble and annoyance, and has consequently been greatly despised. It has recently been discovered that the plant has its use, as rope can be made from it equal to the best hemp, and stronger and finer than jute. The discovery was made by a negro who needed a piece of rope, but could find none. On looking around, his attention was called to this plant, and he cut the stalks and treated them in the same manner he had been accustomed to see hemp treated in Kentucky, and the result was a fibre of good length and of surprising strength, which the man soon converted into rope.

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Another ship canal is being projected, this time by our Scotch neighbours. It is now proposed to practically abolish by a cutting fifty feet wide and twenty feet deep the narrow isthmus which, dividing the east and west lochs of Tarbert, unites the Mull of Kintyre to the mainland. Such a canal would give a direct passage from the Clyde to the Atlantic, saving about 115 miles in the voyage to the west and north of Scotland. It is estimated that the undertaking will cost only about £200,000, and the favour with which the idea has been received is indicated by the fact that at a preliminary meeting held in Glasgow a few days ago under the presidency of the Duke of Argyll, a large portion of that sum was subscribed. The annual revenue from shipping which would use the canal is estimated at £12,000.

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It used to be the fashion to look upon Germans as consisting principally of dreamers. They are certainly not so now, as the merchants and traders of the world begin to find. Their last departure in the way of trade, and advertising German productions, is as practical as it is novel. They have formed a Central Union of German Industry. The Imperial Government lately invited the co-operation of the Union in the preparation of an illustrated catalogue of German manufactures. One thousand five hundred copies of this catalogue, containing the names of firms who are prepared to purchase German goods for account of customers abroad, as well as to give a comprehensive idea of the variety and extent of the industrial enterprise of Germany, will be sent to the German Legations and Consulates throughout the world for distribution.

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BRUSSELS CARPET DESIGNER (Experienced) wants situation. Moderate salary. First class references. Address "Designer" *Journal of Fabrics* Office.

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Manufactories, &c.

TO SPINNERS of CARPET WORSTED.—The PENDLESTONE or TOWN'S MILLS, Bridgnorth.—The above PREMISES to LET, with the PLANT in perfect working order, and with the special advantage of an excellent water power of 61 horses (McAdam's Turbine), working together or separately with the powerful new engine. The Plant consists of 9 carding engines, in good order; cone drawing frames, roving and spinning of the best description. The rates of carriage on wool and yarn are, from the situation of the mill, very reasonable, and wages are low. The above are the only premises in the Kidderminster district in which the spinning of carpet worsted can be commenced without heavy outlay. The rent and other payments are moderate, and the plant will be sold on favourable terms to an incoming tenant. Apply to Messrs. Keary, Wyley, and De Wend, Bridgnorth.

Miscellaneous.

WANTED. ORIGINAL DESINGS for all classes of Fancy Trouserings, &c. Address, C. E., *Journal of Fabrics* Office.

TO EXPORTERS.—Mr. Edward Coward, of 2, Pekin Buildings, Liverpool, has considerably extended his Shipping Agency Business, and begs to inform Export Manufacturers in the Woollen Cloth, &c., districts, that he will be happy to conduct the shipment of any goods they send through Liverpool on his usual moderate terms, which may be had on application. Every facility for despatching cargo with rapidity and economy.

THE GAZETTE.

Adjudications of Bankruptcy.

Pendle George and Charles Waite, Jun., Golden Square and New York, woollen merchants. George Pendle, Isleworth and Charles Waite, New York.

Liquidations by Arrangement or Composition.

Hesse Max and Emil Hesse, trading as M. and E. Hesse, Aldermanbury, London, and Portland Street, Manchester, M. Hesse, High Street, Manchester, and E. Hesse, Kent Terrace, Regent's Park, merchants, importers and dealers in silks and trimming materials.

Lymn John, Short Hill. Nottingham, frilling manufacturer.

McNiven John Campbell, Oxford Road, merchant, late Nicholas Street, Manchester, calico merchant.

Tweedale John, Rochdale and Portland Street, Manchester, manufacturer and merchant.

Tweedale Robert Leach, Healey Hall, Rochdale and Portland Street, Manchester, manufacturer and merchant (separate creditors).

Godfrey Harry and Robert Cooper, Jun., St. Mary's Street, Coventry, trimming manufacturers.

Loman Lewin David, trading as L. Loman, New Norrh Road, late Tuilerie Street, Hackney Road, previously Shrubland Grove, Dalston, fringe and trimming manufacturer.

Rosenthall Lewin Arthur, trading as A. Rosenthall, Fitchet's Court, Noble Street and Leconfield Road, Canonbury, late Falcon Square, trimming manufacturer.

Tattersfield James Walker, trading as J. W. Tattersfield and Co., Brooklyn Mill, Ravensthorpe, woollen manufacturer and yarn spinner.

Bannister Edward, Legram's Lane, Horton and Tumbling Hill Street, Bradford. machine wool comber.

Browett Frederick, trading as F. Browett and Co., Little Park Street, Coventry, and Ladies' Hills, Kenilworth, trimming manufacturer.

Dearden Hilton, Bank Foot Mill, Hebden Bridge, cotton spinner.

James Reginald Haweis, 5, Union Court, Old Broad Street and Holder's Hill, Hendon, silk broker.

Leach William, Sudell Road and Ellenshaw Mill, Over Darwen, cotton manufacturer.

Newsome Charles, Jersey Street Mills, Jersey Street, Ancoats, Manchester and Didsbury, cloth raiser.

Dewhirst William, trading as William Dewhirst and Co., Gomersal Yorks., and Brook Street, Cleckheaton, worsted spinner.

Dividends.

Pickford James, trading as James Pickford and Son (Liquidation), Leek, silk manufacturer. 1st and final dividend, 3s. 8d.; W. Pilkington, Eagle Mills, Leek.

Trustees Appointed.

Pearson Thomas (Bankrupt), Leeds, woollen manufacturer. Trustee, H. Holroyd, Cleckheaton, accountant.

Murrell William, Stanley W. G. Murrell and Herbert E. E. Murrell, trading as Williams and Murrell (Liquidation), Blackfriars Road. woollen warehousemen. Trustees, J. F. Lovering, 77, Gresham Street, London, and W. O. Clough, Huddersfield, both accountants.

Dissolution of Partnerships.

Buckley and Marsden, Lane Mills, Leeds Road, Huddersfield, yarn spinners. As regards Jas. Wm. Buckley.

Farrar S. and A., Todmorden, cotton manufacturers. Debts by Abraham Farrar.

Green and Holroyd, Firm Mill, Longwood, fancy woollen manufacturers.

Hollins Francis and Co., Liverpool, cotton brokers. As regards Francis Hollins.

Pettit E. S. and Co., North Street Mills, Shudehill, Manchester, cotton waste merchants.

Begg Alexander and Co., Paisley, manufacturers. Debts by Alexander Paterson, who continues the business.

Bertois Jules and Co., George Street, Liverpool, cotton brokers. Debts by Jules Bertois.

Booth, Pitt and Co., Sude Hill Mill and Huddersfield, woollen cloth manufacturers. Debts by George Pitt.

Fleetwood, Milnes and Co., Bradford, stuff and woollen printers.

Harrison James and Sons, Bradford and Bromsgrove, woolstaplers and fellmongers.

Mason, Taylor and Co., Bank Top Mills, Macclesfield, silk manufacturers.

Reade and Co., Congleton, silk spinners. As regards John Fielder Hall.

Wharton C. and Son, Batley Carr, near Dewsbury, druggett and woollen manufacturers. Debts by Rowland Siddall.

Maclennan, Campbell and Co., Princes Square, Glasgow, silk and woollen yarn merchants. Debts by Alexander Maclennan, who continues the business.

Bateson and Hilton, Liverpool, cotton brokers.

Booth J. and S. and Co, High Street, Manchester, and Walkden, near Manchester, manufacturers of cotton goods.

Archibald J. and R., Devonvale, Tillicoultry, woollen manufacturers.

Bills of Sale.

Cooke, J., Edwin Street, Hunger Hill Road, Nottingham, Turton, J., 13, Loverseed Vale, Nottingham, dyers	£60 0 0 &c.
Dean, J. B., Abbey Street, Bethnal Green Road, braid manufacturer .. .. for	£65 0 0 &c.
Lightholler, F. J., Cross-hall Works, Chorley, cotton-spinner	deed agreement
Ashworth, J. J., Beech Hill, Rochdale, dyer	£100 0 0
Briggs T., Rochdale Road, Manchester, yarn agent	£100 0 0
Brown, W., 8, Milton Place, Halifax, damask manufacturer	abs. sale
Tattersfield, J., North Road, Mirfield, blanket manufacturer	£200 0 0 &c.
Barker T. Byerden Mill, Burnley, cotton manufacturer	£1,869 16 0 &c.

PATENTS.

Specially compiled for "The Journal of Fabrics" by G. G. M. Hardingham, C.E., 191, Fleet Street, London, E.C.

Applications for Letters Patent.

		No.
Braiding machines. W. R. Lake (F. L. Veerkemp, C. F. Leopold and W. Dacker, Philadelphia)	11th July	3288
Combing machine. J. W. Bradley and J. Wood, Bradford	30th June	3088
Combing machine. F. Fairbank and J Robertshaw, Allerton	6th July	3202
Combs employed in twist lace machines. W. Spowage, Nottingham	15th July	3362
Carpets. J. H. Braithwaite, Airethwaite, Kendal	21st July	3470
Dyeing cotton, &c. E. Heppenstall, Huddersfield	10th July	3262
Dyeing cotton. G. W. V. Nawrocki (G. Fagenburg Rydbohohn, Sweden)	12th July	3308
Drawing, spinning and twisting fibrous substances. F. W. Fox, Burley, and T. Coulthard. Preston	18th July	3402
Drawing rollers for spinning machines. A. J. Boult (C. Jenatzy-Leleux, Schaerbeeck-lez-Bruxelles)	24th July	3509
Fillett and setting machines. W. and E. Blackburn, Cleckheaton	10th July	3269
Fabrics for protective and preservative purposes. J. Jowitt and G. S. Page, 49, Wall Street, New York	25th July	3539
Finishing textile fabrics. W. W. Blackett, Leeds	27th July	3569
Guides for spinning machinery. P Sharp, Aberdeen	4th July	3139
Indicating length of fabrics in rolls. J. Darling, Glasgow, and J. Bailing, Shotts	11th July	3285
Looms. C. Cattow, Burnley	29th June	3069
Looms for chenille or fur pile fabrics. J. Dodd, Oldham, and W. Adam, Kidderminster	30th June	3087
Looms. W. Buckley, Delph. and J. Hollingworth, Dobcross	6th July	3210
Looms. C. Thompson. Halifax	8th July	3249
Looms. R. S. Hattersley and J. Hill, Keighley	18th July	3408
Looms. R. J. Gulcher, Notting Hill, London	18th July	3411
Looms. T. Singleton, Darwen.	27th July	3566
Lace and like fabrics. F. E. A. Burke, Schwelm, Westphalia.	14th July	3357

Mules (self-acting). C. A. Barlow (V. Lenoir, Paris). 30th July 3090
Metallizing cloth. A J. Boult (J. Hautrive Lille). 22nd July 3498
Machines for washing and rinsing fabrics. B. Davies, Adlington and J. Eckersley, Blackrod. 26th July 3542
Preparing cotton and other fibrous substances. S. Lord and J. Kaberry, Rochdale. 28th June 3052
Picker arms for power looms. W. Alexander. Dundee. 1st July 3104
Preparing cotton for spinning. A. M. Clark (G. A. Risler, Cernay, Alsace). 5th July 3183
Placing fibrous materials on pattern cards. W. Greenwood, Halifax. 6th July 3196
Pickers and picking bands. E. Booth, Manchester. 10th July 3259
Rubbing mechanism for carding engines. C. A. Day (J. Barker, Philadelphia). 22nd July 3494
Sewing carpets, &c. W. R. Lake, (A. Neusdatdt, San Francisco). 30th June 3100
Scouring, washing, dyeing and sizing hanks of fibrous materials. J. F. Kilburn, Meltham. 1st July 3111
Spinning frames. A. M. Clark (G. Jaquith, Maysville, U.S.A). 4th July 3163
Spinning and twisting apparatus. J. Myers and B. Berry, Bradford. 10th July 3261
Tentering, stretching, &c. J. Ashworth, Rochdale. 8th July 3239
Temples. J. Holding, Manchester. 14th July 3337
Washing apparatus. J. Petrie, Junr., and F. W. Petrie, Rochdale. 30th June 3094
Waterproofing fabrics. C. Court, Rotherhithe. 22nd July 3493
Wool carding engines. E. G. Brewer (C. Rüdgier, Forst Lusatia, Germany). 22nd July 3501

Grants of Provisional Protection for Six Months.

2707	2743	2838	2844	2866	2880
2928	2795	2799	2852	2903	2946
2959	2963	2800	3069	3087	3088
3090	3094	3104	3111	3139	3151
3163	3183	3166	3196	3202	3210
3239	3259	3261	3269	3249	3285

(all of 1882).

Notices to Proceed.

(Notice of opposition to the Sealing of a Patent must be given within twenty-one days of the Notice to Proceed being advertised in the Journal.)

Bleaching jute, &c. T. G. Young, Kelly, Renfrew. 1st April 1586
Bleaching. E. de Pass (G. D. Davis, Boston, U.S A). 17th June 2864
Bleaching. W. J. Holmes, Primrose Hill Road, London. 14th March 1217
Carpets and similar fabrics. J. J. Delmar, Ormside Street and W. Follistt, Bethnal Green, London. 27th Feb. 936
Clearing woollen materials from vegetable impurities. C. D. Abel (Societe Anonyme La Laine, Paris. 27th Feb. 951
Circular bobbin net machines. W. H. Beck (W. Dawson, St. Pierres les Calais. 17th March 1310
Cloth plating and measuring machines. C. and A. Edmerton, Manchester. 20th June 2903
Dobbies for fancy weaving. J. Shorrock, Darwen. 27th Feb. 935
Drying machines. A. M. Clark (V. de Gombert, Paris). 11th April 1718
Figured pile fabrics. T. Anderson, Liversedge. 13th May 2254
Flyers. R. C. Sykes, Cleckheaton. 23rd March 1411
Looms. T. Singleton, Darwen. 2nd March 1008
Looms. T. Greenwood, Hawick. 15th March 1256
Looms. J. and F. Leeming and R. Wilkinson, Bradford. 13th March 1215
Looms. J. C. Fielden, Manchester, R. H. Harrison, Dukinfield. 14th March 1243
Looms for chenille or fur pile fabrics. J. Todd, Oldham, and W. Adam, Kidderminster. 30th June 3087
Mules and twiners. J. Wain, Manchester. 25th March 1446
Needle woven tapestry. A. J. Boult (C. T. Wheeler, New York). 14th March 1233
Producing azo-colors on vegetable fibre C. Holliday, Huddersfield. 21st June 2946
Printed fibrics. J. Imray (T. Grison, Paris). 17th March 1297
Preparing cotton for spinning. A. M. Clark (G. A. Risler, Cernay, Alsace) 5th July 3183
Reels for thread. A. J. Boult (A. Descamps, Lille) 12th May 2249
Ring spinning machinery. G. Perkins, G. Wimpenny, and J. H. Evans, Manchester 16th June 2838
Regulating dabbing brushes for combing machines. J. Haigh, W. Dean, and W. Mitchell, Bradford 2nd June 2600
Ring spinning frames. A. M. Clark (J. B. Rolland, Paris) 1st April 1602
Rendering fabrics uninflammable. P. Jensen (H. S. Snillott, and H. David, Paris) 5th Jan. 63
Spinning fibres. S. Tweedale Accrington 14th June 2799
Sewing carpets, &c. W. R. Lake (A. Neusdatdt, San Francisco) 30th June 3100
Sewing leather, &c. W. Hollingworth, Bradford 14th March 1240
Treatment of vegetable fibres. C. D. Abel (E. Frémy and V. Urbain, Paris) 17th April 1816
Tapestry looms. D. A. Guille, South Moulton Street, London 31st May 2566
Treating and finishing lace. J. Tuffnell, Manchester 22nd April 1925
Winding yarn or thread. B. M. Knox, Kilburnie 16th May 2290
Winding cotton, &c. H. C. Hill and H. H. Brown, Staleybridge 10th May 2196

Patents Sealed.

5496 (of 1881)		63	91	167	171	312	288
233	487	429	499	543	594	430	492
601	863	886	983	1265	1538	2042	3145
2574	2388 (all of 1882)						

Patents on which the Stamp Duty of £50 has been paid.

Henry Josiah Griswold, of Charterhouse Square, E.C., "Improvements in the manufacture of stockings and in machinery for producing these and other looped fabrics." 1st July, 1879 2669
W. M. Brown, 38, Southampton Buildings, London, "Improvements in looms --A communication. 5th July, 1879 2746
John Crisholm, Oldham. "Improvements in the construction of self-acting mules and twiners used for spinning and doubling wool and other fibrous substances." 12th July, 1879 2845
Harvey Heywood, manufacturer, and John Holland, manager, both of Tonge, near Manchester, "Improvements in yarn polishing machinery." 12th July, 1879 2846
B. J. B. Mills, 23, Southampton Building, London, "Improvements in means or apparatus employed in the process of dyeing silk and other textile materials, and in other operations accessory thereto."—A communication. 15th July, 1879 2872
George Ashworth and Elijah Ashworth, both of Manchester, engineers, "Improvements in carding engines and in the method of and arrangements for grinding the flats thereof." 17th July, 1879 2916
John Boyd, Shettleston, near Glasgow, "Improvements in machinery for winding, reeling, doubling, twisting and spinning yarn or thread." 21st July, 1879 2953

Patents on which the Stamp Duty of £100 has been paid

Samuel Lowe, flock merchant, William Renton, engineer, and James Johnson, engineer, all of Leeds, "An improved machine or apparatus for cutting "flocks" or rags or other fibrous material." 30th June, 1875 2379
J. H. Johnson, 47, Lincoln's Inn Fields, London, "Improvements in the manufacture of wadding, batting, and felted fabrics, and in the machinery or apparatus employed therein."—A communication. 23rd July, 1875 2623

Copyright of Designs.

(Registered during July, 1882.)

Class VI., Carpets.

382,760 J. Crossley and Sons (Limited), Halifax.
383,010 The Heckmondwike Manufacturing Company (Limited), Heckmondwike, Yorks.
383,728-40 James Wilkinson and Son, Lancaster.
383-856-57 H. R. Willis and Co., Kidderminster.

Class XI., Furnitures.

382,487-88 The Rossendale Printing Company, Manchester.
382,664 A. Plowright and Co., Manchester.
382,715 F. Leigh and Co., Manchester.
382,890 The Rossendale Printing Company, Manchester.
382,891 Boden, Terras and Co., Manchester.
382,892 T. Wardle, Leek.
382,894 G. Andrew and Sons, Compstall and Manchester.
383,417-19 D. Lee and Co., Manchester.
383,466 D. Lee and Co., Manchester.
383,547 D. Lee and Co., Manchester.
383,685-89 B. Duckworth and Sons, Manchester.

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Contents.

	Page.
The Institute of Patent Agents	25
Board of Conciliation in the Carpet Trade	25
The Registration of Trade Marks ...	26
Embossing Fabrics	26
The Cultivation of Flax in New Zealand	27
The New Law on Bills of Sale	27
Waste of Fuel and the Smoke Nuisance	28
The Russian Tariff	28
The Cotton Manufactures of China ...	29
Scientific and Art Notes	29
ORIGINAL DESIGNS	30
Monthly Trade Reports	30
Uninflammable Fabrics	30
Original Designs for Trouserings and Suitings	31
MACHINERY, TOOLS, &c.:—	
The New Positive Universal Temple	32
Messrs P. & C. Garnett's Waste Opener and Burring Machine ...	32
The Shawl Manufacture in Germany...	32
The Treatment of China Grass, &c. ...	33
Jute Velvet for Upholstering Purposes, &c.	33
The Silk Industry in Japan	33
Carpets of Hair	33
Glasgow Technical College	34
The Metric System in Measures of Length and Weight	34
Odds and Ends	34
THE GAZETTE :—	
Bankruptcies, Liquidations, &c. ...	35
Dissolutions of Partnership	35
Bills of Sale	35
LETTERS PATENT :—	
Applications for Letters Patent, etc.	35
Copyright of Designs	36

ILLUSTRATIONS.

A Design for a Royal Axminster Carpet.
A Design for an Alhambra Quilt.
A Design for a Cretonne or Tapestry Fabric.
Original Designs for Trouserings, Suitings.
Hardaker's Patent Positive Loom Temple.

Notices.

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The Publishers are open to receive from Designers, Original Designs of Carpets, Damasks, Tapestries, Linen, Cretonnes, &c., and such as are accepted will be published with the Designers name affixed. All Designs sent for approval must be 10 inches long by 7 inches wide for single page, and for double page, 16 inches by 10 inches, and must be accompanied by Postage Stamps sufficient to pay return Postage in case they are rejected.

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Authors are requested to retain copies of their manuscripts; rejected manuscripts cannot be returned.

To prevent any misunderstanding, all Articles sent to the *Journal of Fabrics* for publication, will be considered as offered *gratuitously* unless it is stated explicitly that remuneration is expected.

Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers in making enquiries of, or opening accounts with Advertisers in this paper, will kindly mention the *Journal of Fabrics* as the source from whence they obtained their information.

The Institute of Patent Agents.

AN Association, named the Institute of Patent Agents, has been formed during the past month. The objects of which are :—(*a*) To form a representative body of Patent Agents of the United Kingdom, for the purpose of promoting improvements in the Patent Laws, and in the regulations under which they are administered; (*b*) To frame and establish rules for the observance of Patent Agents in all matters appertaining to their professional practice; (*c*) To extend their opportunities and facilities for meeting, correspondence, discussion, and interchanging of ideas respecting matters connected with their professional practice, and generally to aid in the acquisition, and dissemination of knowledge appertaining to their profession; (*d*) To raise and obtain moneys by subscriptions, donations, or otherwise, for expenditure in accomplishing the objects of the Association, and to expend such moneys, when raised, in accomplishing such objects; (*e*) The doing all such other lawful things as are incidental or conducive to the attainment of the above objects or any of them. In order to enjoy the rights and privileges as a member of the Institute, as a Fellow, Associate, Foreign Member, or Honorary Member certain qualifications are necessary, particulars of which are given in full in the "Articles of Association." The first council has already been formed, and consists of President, Vice-President, and eight members, all of whom are Patent Agents, standing high in their profession, and men of practical experience. The promoters of the scheme have, no doubt, for some time past felt the want of an association that would give all practical men in the profession opportunities of meeting and ventilating questions affecting their interests. It has often been a matter of surprise to us, that although nearly all the various professions throughout the United Kingdom have had their representative bodies to look after their interests, the Patent Agents have had, until the present time, to secure individually any benefits to which they were entitled as a community. There is no doubt that the Institute will be of great benefit to the profession at large, and of still greater benefit to inventors, insomuch as they will have in the future the advice of really practical men, who of necessity must eventually become members of the Institute in order to prove their fitness as practical Patent Agents, and also to maintain a certain status in the profession. Perhaps the greatest value that the Institute will be to its members, will be in the opportunities afforded them of discussion, correspondence, and interchanging of ideas, and by these means advancing each others interests. The Association, we predict, has a prosperous future before it, and it is hoped that the whole of the members of the profession throughout the United Kingdom will do their utmost to further the interests of the Institute.

Board of Conciliation in the Carpet Trade.

A Meeting of the above Board was held a few days ago, in the Council Chamber, Kidderminster. Mr. Abel Ram (barrister), presided; Messrs. H. Dixon, J. Bennie, C. Harrison, C. Hughes, C. W. Green, and T Garlick resresented the Manufacturers' Association; and Messrs. H. Moule, A. Coates, A. Cope, J. Cooke, Lloyd, T Rowe, A. Macbeth, J. Evans, and J. Poutney, the Weavers' Association. The weavers originally had nine subjects to bring forward, and the manufacturers three, but a number of these were disposed of at a preliminary conference of masters and men a few days ago. The first question gone into was that of the price for weaving what is locally known as "stout;" as to which, it may be remembered, a strike occurred in the spring of the year, the subject being ultimately left to the decision of the Board of Conciliation, which it was then agreed to form. The President, after hearing statements on both sides, went himself to see the looms in actual work, and at the afternoon sitting asked if the matter could not be arranged without his giving a decision. This result could not be arrived at, and in the end Mr. Ram gave a decision adverse to the claims of the weavers on the point. Another of the questions before the Board was one brought forward by the manufacturers, viz.: "Taking nine wires to the inch as the standard for Brussels, and ten for Wiltons, to regulate the price to be paid for more or less wires to the inch." On this Mr. Ram decided that the existing rule was to hold good as to the price for Wiltons, but there was to be a sliding scale as to Brussels. For less than nine wires to the inch the price fixed was less than the manufacturers had offered. Mr. Cope remarked that he did not think the chairman would award less than the manufactures had offered. The Chairman said he had only to be just, but the manufacturers were generous. The weavers asked for an advance from 5d. to 6d. per hour, when they had to make hour time. This was decided against them. The manufacturers wished to bring forward the adoption of "such rules and regulations as to the times and manner of working machinery as will enable the manufacturers of Kidderminster to meet the severe and increasing competition of other places." The weavers opposed this as not coming within the business of the Board as formally defined, and said to entertain the question would probably lead to a general strike in the town. Mr. Ram ruled it was not within the matters referred to the Board. The manufacturers quoted cases to show the mischief of a too hard-and-fast line as to hours of working, and Mr. Ram threw out some suggestions for consideration with the view of meeting the difficulty. The proceedings closed with some complimentary remarks. It was suggested that the Board should not meet oftener than periods of six months at least; and Mr. Ram was asked to draw up some rules for the guidance of future meetings.

For the Exhibits of Messrs. J. & W. Birkby, Liversedge, at the Technical School, Bradford, see Stand No. 14, Gallery Annexe.

The Registration of Trade Marks.

It may be of interest to our readers to notice that several new rules and alterations governing the registration of trade marks have been made by the Lord Chancellor, with the concurrence of the Lords' Commissioners of Her Majesty's Treasury, which are as follows :—

Rule 5 of the rules made in August, 1876, shall be altered so as to read thus : 5. A person, whether a British subject or an alien, desiring to register a trade mark, shall apply to the registrar by sending to him a statement prepared in accordance with rules 6, 7, and 8, and the prescribed fee, with the addition in the case of a trade mark which has been used before the 13th of August, 1875, but not otherwise, of a declaration prepared in accordance with rules 9, 10, 11, 64, 65, 66, and 67.

Rule 11 of the rules made in August, 1876, shall be altered so as to read thus : 11. Where an application for the registry of a trade mark is made by or on behalf of any firm or partnership, the statement and declaration shall be made by one member only of such firm or partnership, or by any person duly authorised by such firm or partnership ; and the registrar may require such proof as he thinks fit that the application made is duly authorised by such firm or partnership.

Rules 23, 24, 25, 26, and 27, made in August, 1876, shall be abolished, and the following rules substituted therefor :—

23-24. The person to whom any registered trade mark has been assigned or has been transmitted by death, marriage, bankruptcy, or otherwise by operation of law, may apply to be registered as proprietor thereof by sending to the registrar a statement and declaration in the prescribed form, and accompanied by the prescribed fee.

25. Any assignee or transmittee may assign his interest in any mark notwithstanding that he has not been registered as proprietor thereof.

26-27. Every declaration made by an assignee or transmittee shall state his name and address, and calling, and that the mark has been lawfully assigned or transmitted to him with the goodwill of the business concerned in the goods with respect to which the trade mark is registered, or with some part of such goodwill ; and the registrar may, if he thinks fit, require proof of the assignment or transmission.

Whereas it is desirable to alter the amounts of the fees in the second schedule charged respectively upon application for, and registration of, trade marks, it is hereby ordered that the fee upon application shall be 5s. instead of £1 as at present, and that the fee upon registration shall be £1 15s. instead of £1 as at present, but that where application is made for the registration of more than one trade mark at the same time and in the same class, the fees for each mark after the first shall be 5s. upon application, and 15s. upon registration, as set forth in the accompanying amended schedule of fees.

It is also necessary that an alteration should be made in the second schedule to the rules, with respect to the fees to be charged on applications for the registration of subsequent proprietors in cases of assignment or transmission of the trade marks. According to the existing definition, the fee or fees can only be charged in cases where the subsequent registration has been actually effected, although the whole work of examination, &c., except the clerical act of entering upon the register has been performed. In future, therefore, the fee for subsequent registration shall be charged on the application for such registration.

As regards the rule made the 4th February, 1878, to enable the registered proprietor of a trade mark to obtain the cancellation of the entry of such trade mark upon the register, it is found to be desirable to provide also for the cancellation of any part of an entry. In future, therefore, the registered proprietor of a trade mark may at any time send to the registrar an application to cancel part of an entry upon the register, leaving the registration still in force for the remaining portion of such entry, such application to be accompanied by the prescribed fee and by a declaration made by the applicant, stating his name, address, and calling, and that he is the person whose name appears upon the register as the proprietor of the said trade mark; and thereupon the registrar may, if satisfied of the truth of the statement made by the applicant, cancel part of the entry of such trade mark, as before mentioned.

Moreover, as the schedule of fees has been several times amended by additions thereto, the whole has been recast and consolidated in the form which accompanies these rules.

It is furthermore ordered that the revised schedule of fees shall come into operation on the 2nd day of October, 1882.

Signed, SELBORNE, C.

29th July, 1882. NEW SCHEDULE OF FEES.

The following fees are to be payable to the registrar on or for the following occasions or purposes :—

	£	s.	d.
1. On application to register one trade mark for one or more articles included in one class	0	5	0
2. On application to register more than one trade mark for one or more articles included in one class for each additional trade mark after the first	0	5	0
3. On application to register a trade mark in respect of goods in different classes, for every class after the first to which to such trade mark is extended, an additional fee of	0	2	0
4. For registration of one trade mark	1	15	0
5. Where the same person is registered at the same time for more than one trade mark, for registration of each additional mark after the first	0	15	0
6. Where the same person is registered at the same time for the same trade mark in respect of goods in different classes, for the registration of one mark in each class after the first an additional fee of	0	2	0
7. For entering notice of opposition for each trade mark, whether in one or more classes	2	0	0
8. On application to register subsequent proprietor in cases of assignment or transmission, the first mark	1	0	0
9. For every additional mark assigned or transmitted at the same time	0	2	0
10. For altering address on the register, for every mark	0	5	0
11. For every entry in the register of a rectification thereof or an alteration therein, not otherwise charged	0	10	0
12 For cancelling the entry or part of the entry of a trade mark upon the register, on the application of the owner of such trade mark	0	5	0
13. For certificate of registration to be used in legal proceedings	1	0	0
14. For certificate of registration to be used for the purpose of obtaining registration in foreign countries	0	5	0
15. For copy of notification of registration	0	2	0
16. For certificate of refusal to register a trade mark under section 2 of 39 and 40 Vic., c. 33	1	0	0
17. For certificate of refusal, at the same time, for more than one trade mark, for each additional mark after the first	0	10	0
18. Settling a special case by registrar	2	0	0
19. For continuance of mark at expiration of 14 years	2	0	0
20. Additional fee where fee is paid within three months after expiration of 14 years	1	0	0
21. Additional fee for restoration of trade mark when removed for non-payment of fee	2	0	0
22. For inspecting register, for every quarter of an hour	0	1	0
23. For making a search amongst the classified representations of trade marks, for every quarter of an hour	0	1	0
24. For office copy of documents 2d. per folio, but never less than	0	1	0
25. In cases where a trade mark requires a greater space than two inches of the depth of page of the *Trade Marks Journal*, for each additional inch or part of an inch	0	2	6

Embossing Fabrics.

In another part of the present issue of the Journal, in describing the embossing of jute materials, a process is given for preventing the embossed part being affected by moisture and the pattern disappearing. Another process applicable to various classes of materials is the subject of an invention which has received provisional protection only. In ordinary embossed materials it is well known that the parts acted upon by the embossing rollers are often so affetced by moisture that the pattern partly disappears. In carrying out the process a stiffening composition is used, consisting of water, pelts, borax and isinglass, the proportions of which vary in accordance with the nature or quality of the material to be operated upon ; but the following proportions will suffice for use in most fabrics, *viz.* :—water, one gallon ; pelts, one pound ; borax, one ounce and isinglass, one ounce. In the first instance a weak solution of the above is applied so that it may pass thoroughly into the fabric, and afterwards a stronger solution is applied. The piece is then dried and "finished" out by the ordinary means, but in the "steaming" it is advisable according to the invention to use a greater pressure of steam than usual in order to distribute the solution evenly throughout the fabric ; but as the steaming operation is being gradually completed the pressure may be reduced. After the above preliminary process is carried out, the piece, while still warm, is embossed on the ordinary machine, but the delivery and embossing rollers of the machine should be heated by steam or other convenient means, for the purpose of promoting the adhesive qualities of the solution in the material, by so doing the material after being compressed or impressed becomes solidified. The solution also by being warm during the embossing operation passes into the raised part of the pattern and fixes it. After the above operation is finished and when the fabric has become cold the back of the material is submitted to the action of a rotary brush, and sufficient steam to soften the solution in that part. The steaming and brushing have the effect of improving the touch of the fabric.

New Zealand has been offering rewards for an electrical sheep-shearing machine, and the offer has produced a response in a rather unexpected quarter, by the patenting of a machine to clip seal-skins by the aid of electricity The skin is 'fed' over a knife-edge bar, above which is stretched a fine platinum wire. The wire is raised to a white heat by electricity, and meets the longer hairs as the skin passes under it, and mows them down, all the fur being thus reduced to one even length.

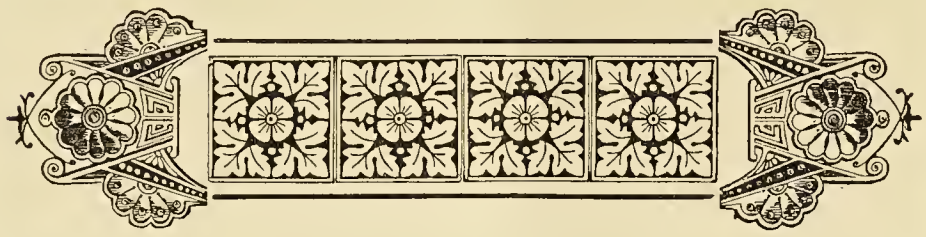
The Cultivation of Flax in New Zealand.

IN a report on the cultivation of Flax in New Zealand, Consul Griffin states that *Phormium tenax* is by far the most valuable fibrous plant indigenous to New Zealand, and since 1809, it has been an article of export. The attention of Europeans was first directed to it by Captain Cook, who described it as something superior to either flax or hemp. The Maories have for many years used it for binding together the frame-work of their houses, and for making clothing, baskets, fine mats, fishing nets and lines, and sails for their boats and canoes. *Phormium tenax* is sometimes called the flax lily. The leaf varies in size from three to fourteen feet in length, and from half-an-inch to five inches in breadth at the widest part. It grows in bunches or groups of plants, each shoot has five leaves, and, on an average, about ten of these shoots form a bunch. The leaves are perennial, hard and sword-shaped, with a stalk rising five or six feet above them, bearing a profusion of yellow, and sometimes red flowers, followed by triangular pods filled with flat and thin black shining seed. The plant attains its full growth in three years when the leaves generally split at the end, and it first comes into flower. It is said that in rich soil the flower rises to a height of twenty feet. The leaves are smaller than those of European flax and hemp plants, being composed of cellular trusses running the whole length of the leaf incased in a green substance. The trusses consist of two parts—wood and bast, the latter forming the fibre so highly prized. The vascular bundles compose the inner bark of the plant, and serve to circulate the juices which are taken from the soil by the roots; these consist of exceedingly fine threads, one overlapping the other in such a manner as to give a free circulation throughout the leaf. The plant is indigenous to New Zealand and Norfolk Island, although it has been transplanted in India and other countries. It grows best in rich, moist, and well-drained grounds, and attains its maximum growth on the banks of running streams. When the leaves are full grown the natives gather them when green, and separate the fibres; they scrape the leaves with a shell, and then divide them with a comb. They are then put in the sun to dry, and when dry are perfectly white, soft and silky to the touch. It takes only a very short time to prepare the fibre, and about one ton of fibre is produced by the natives out of four and a half tons of green leaves. A full-grown plant will produce on an average about thirty-six leaves, besides shoots from the roots, and it takes about six leaves to yield one ounce of fibre. At this estimate an acre of ground planted three feet apart would yield about sixteen hundred weight of fibre. There are many varieties of the *Phormium tenax*, among them being the *aonga*, a variegated flax; *atewhiki*, a very white fibre, used for making fine mats and garments; the leaf is narrow with a reddish tinge and bright scarlet lines; *sapato*, cultivated at Coromandel, Kawhia, and Waikata, with glossy leaves rather red at the edge, having a general orange green appearance; *sarariki*, a species of very fine and soft texture used for making ornamental mats, the leaves tapering, of a dull olive green. There are several flax mills in New Zealand, principally in Auckland, used chiefly for dressing the flax for rope making. Here the green leaves are stripped by revolving rollers with projecting beaters travelling at a high rate of speed, these crush the epidermis against a fixed plate so arranged as to allow room for the fibre to remain intact. The fibre thus freed from the leaf of the plant is washed by various methods, put on the ground or on lines to dry and bleach, finished by an arm or barrel scutch, and when boiled is ready for the market. All the machines used are identical in principle, and vary only in the details by which the principle is carried out. This principle is that the leaf is held between horizontal feed rollers, revolving at a certain speed, while as the leaf passes out from them, a drum, armed in its circumference with iron beaters, and revolving more rapidly than the feed rollers, strips the epidermis and tissues away from the fibre, means being provided for adjusting the beating drum to a proper distance from the roller or bar against which the phormium leaf is stripped, so that the leaf may neither, on the one hand, pass through without being crushed, nor, on the other, have the fibres cut. The method of preparing fibre by machinery is a great improvement over that pursued by the Maoris, as regards the quantities produced, as they do not obtain from each leaf one-fourth of the quantity which is obtained in machine dressing. The natives cut off the leaves about six inches below the point where the two blades adhere together, and reject the coloured edges; they also take much time and pains in preparing the leaf, often soaking it for four or five days in running water, and then beat it with a stone or mallet. This process is repeated over and over again for four or five weeks. Consul Griffin states, however, that the fibre dressed by the natives is far more valuable and beautiful than that prepared by machinery The principal competing fibre with *Phormium tenax* is Manilla hemp. This is made from a species of plantain called *Musa textilis*, which is planted generally on the slopes of hills, and requires shade and plenty of moisture. The trees are planted about eight feet apart, and are cut down at the end of the third year and made into fibre. A full-grown tree is estimated to yield about one pound and a half of hemp. The process of manufacture is as follows:—The tree is cut down and stripped of its linings; these are then cut into pieces three or four inches wide, after which they are drawn underneath an instrument resembling a saw fixed in a block of wood. The fleshy part of the cortex is scraped off, and the fibre alone remains, which is then placed in the sun to dry. Two persons, one engaged in cutting down the trees and stripping them, and the other in extracting the fibre, can work up about 25 pounds of hemp in one day. The value of *Phormium tenax* exported from New Zealand, in the year 1880, amounted to £16,267.

The New Law on Bills of Sale.

On the 1st November next a new law comes into operation with regard to bills of sale. One of the chief features of the new Act is the discouragement given to the borrowing of small amounts by making all bills for sums under £30 absolutely void. The importance of this provision may be inferred from the fact that last year there were as many as 14,519 bills of sale for amounts under £20. Another very important point is that the holder of a bill of sale will be deprived of the preference which was given to him by the Act of 1878 over the ordinary creditors of a trader who becomes bankrupt. In case of bankruptcy the debtor's goods will in general be distributed among the creditors instead of being a good security for the debt of one to whom a bill of sale has been given. For the Act repeals the innovation of the statute of 1878, which says that chattels comprised in a bill of sale "shall not be deemed to be in the possession, order, or disposition of the grantor ... ... within the meaning of the Bankruptcy Act." Another thing against which a bill of sale will afford no protection will be the recovery of taxes and poor and other parochial rates. Then, again, it will be necessary to set forth in a bill of sale an inventory of all the personal chattels comprised in it; for it will be void, except as against the grantor, in respect of any chattels not so specifically described. Moreover, it will be similarly void as regards property acquired after the execution of the bill, except that growing crops may be affected by a bill where they are actually growing at the time of execution, and also fixtures, plant, or trade machinery that are substituted for others of the same kind. The Act sets forth the five classes of reasons which alone will make property liable to be seized under a bill of sale. They are (1) if the debtor make default in payment at the proper time of the sum borrowed, or in the performance of any agreement that is contained in the bill and is necessary for maintaining the security; (2) if he become a bankrupt or suffer the goods to be distrained for rent, rates, or taxes; (3) if he fraudulently remove the goods from the premises; (4) if he fail, without reasonable excuse, to produce upon demand of the lender the last receipt for rent, rates, and taxes; and (5) if execution be levied against the goods of the debtor under a judgment of law. When property is seized under a bill of sale, it is not to be removed or sold until after the expiration of five days; and during that time a judge, if he is satisfied that by payment of money or otherwise the cause of seizure no longer exists, may, on the application of the debtor, restrain the removal or sale or make any other order that seems just. The new Act contains a form according to which every bill given by way of security for the payment of money is to be made; and it is only with this kind of bill that the Act deals. It will no

longer be necessary for the execution to be attested by a solicitor or for the attestation to state that before execution the effect of the transaction had been explained by him to the borrower. The attestation will have to be merely by one or more creditable witnesses not being a party In default of attestation, of registration within seven days, and of the true consideration being set forth, the bill will be absolutely void in respect of the chattels comprised therein. Another noticeable point in the act is that provision is made for local registration. Where the residence of the borrower or the property is outside the London bankruptcy district the Registrar is directed to transmit an abstract of the bill to the County Court Registrars of the districts in which the property and the residence are.



Waste of Fuel and the Smoke Nuisance.

The President of the British Association speaking lately on the merits of coal and gas for heating purposes, said:—

"The total annual value of the gasworks' by-products may be estimated as follows:—Colouring matter, £3,350,000; sulphate of ammonia, £1,947,000; pitch (325,000 tons), £365,000; creosote (25,000,000 gallons), £208,000; crude carbolic acid (1,000,000 gallons), £100,000; gas coke, 4,000,000 tons (after allowing 2,000,000 tons consumption in working the retorts) at 12s., £2,400,000; total, £8,370,000. Taking the coal used, 9,000,000 tons, at 12s., equal £5,400,000, it follows that the by-products exceed in value the coal used by very nearly £3,000,000. In using raw coal for heating purposes these valuable products are not only absolutely lost to us, but in their stead we are favoured with those semi-gaseous by-products in the atmosphere too well known to the denizens of London and other large towns as smoke. Professor Roberts has calculated that the soot in the pall hanging over London on a winter's day amounts to fifty tons, and that the carbonic oxide, a poisonous compound, resulting from the imperfect combustion of coal, may be taken as at least five times that amount. Mr. Aitken has shown, moreover, in an interesting paper communicated to the Royal Society of Edinburgh, last year, that the fine dust resulting from the imperfect combustion of coal is mainly instrumental in the formation of fog, each particle of solid matter attracting to itself aqueous vapour; these globules of fog are rendered particularly tenacious and disagreeable by the presence of tar vapour, another result of imperfect combustion of raw fuel, which might be turned to much better account at the dyeworks. The hurtful influence of smoke upon public health, the great personal discomfort to which it gives rise, and the vast expense it indirectly causes through the destruction of our monuments, pictures, furniture, and apparel, are now being recognised, as is evinced by the success of recent Smoke Abatement Exhibitions. The most effectual remedy would result from a general recognition of the fact that wherever smoke is produced fuel is being consumed wastefully, and that all our calorific effects, from the largest down to the domestic fire, can be realised as completely and more economically without allowing any of the fuel employed to reach the atmosphere unburnt. This most desirable result may be effected by the use of gas for all heating purposes, with or without the addition of coke or anthracite. The cheapest form of gas is that obtained through the entire distillation of fuel in such gas producers as are now largely used in working the furnaces of glass, iron, and steel works; but gas of this description would not be available for the supply of towns owing to its bulk, about two-thirds of its volume being nitrogen. The greater efficiency of gas as a fuel results chiefly from the circumstance that a pound of gas yields in conbustion exactly double the heat produced in the combustion of a pound of ordinary coal. This extra heating power is due partly to the freedom of the gas from earthy constituents, but chiefly to the heat imparted to it in effecting its distillation. Recent experiments with gas burners have shown that in this direction also there is much room for improvement. Before many years have elapsed we shall find in our factories and on board our ships, engines with a fuel consumption not exceeding 1lb. of coal per effective horse power per hour, in which the gas producer takes the place of the somewhat complex and dangerous steam boiler. The advent of such an engine and of the dynamo-machine must mark a new era of material progress at least equal to that produced by the introduction of steam power in the early part of our century. Let us consider what would be the probable effect of such an engine upon that most important interest of this country—the merchant navy. According to returns kindly furnished me by the Board of Trade and "Lloyds' Register of Shipping," the total value of the merchant shipping of the United Kingdom may be estimated at £126,000,000, of which £90,000,000 represents steamers having a net tonnage of 3,003,988 tons, and £36,000,000 sailing vessels of 3,688,008 tons. The safety of this vast amount of shipping, carrying about 5-7ths of our total imports and exports, or £500,000,000 of goods in the year, and of the more precious lives connected with it, is a question of paramount importance It involves considerations of the most varied kind, comprising the construction of the vessel itself, and the material employed in building it; its furniture of engines, pumps, sails, tackle, compass, sextant, and sounding apparatus, the preparation of reliable charts for the guidance of the navigator, and the construction of harbours of refuge, lighthouses, beacons, bells, and buoys, for channel navigation. Yet notwithstanding the combined efforts of science, inventive skill, and practical experience—the accumulation of centuries—we are startled with statements to the effect that during last year as many as 1,007 British-owned ships were lost, of which fully two-thirds were wrecked upon our shores, representing a total value of nearly £10,000,000. of these ships 870 were sailing vessels and 137 steamers, the loss of the latter being in a fourth of the cases attributable to collision. The number of sailing vessels included in these returns being 19,325, and of steamers 5,505, it appears that the steamer is the safer vessel, in the proportion of 4·43 to 3·46; but the steamer makes on an average three voyages for one of the sailing ship taken over the year, which reduces the relative risk of the steamer as compared with the sailing ship per voyage in the proportion of 13·29 to 3·46. Commercially speaking, this factor of safety in favour of steam shipping is to a great extent counterbalanced by the value of the steamship, which bears to that of the sailing vessel per net carrying ton the proportion of 3 : 1, thus reducing the ratio in favour of steam shipping as 13·29 to 10·38, or in round numbers as 4 : 3. In testing this result by the changes of premium for insurance, the variable circumstances of distance, nature of cargo, season, and voyage have to be taken into account; but judging from information received from shipowners and underwriters, of undoubted authority, I find that the relative insurance paid for the two classes of vessels represents an advantage of 30 per cent. in favour of steam shipping, agreeing very closely with the above deductions derived from the statistical information. In considering the question how the advantages thus established in favour of steam shipping could be further improved, attention should be called in the first place to the material employed in their construction. A new material was introduced for this purpose by the Admiralty in 1876-78, when they constructed at Pembroke Dockyard the two steam corvettes, the Iris and Mercury, of mild steal. The peculiar qualities of this material are such as to have enabled shipbuilders to save 20 per cent. in the weight of the ships hull, and to increase to that extent its carrying capacity. It combines with a strength 30 per cent. superior to that of iron such extreme toughness that in the case of collision the side of the vessel has been found to yield or bulge several feet without showing any signs of rupture, a quality affecting the question of sea risk very fovourably. When to the use of this material there are added the advantages derived from a double bottom, and from the division of the ship's hold by means of bulkheads of solid construction, it is difficult to conceive how such a vessel could perish by collision, either with another vessel or with a sunken rock."

The Russian Tariff.

(Continued from Page 20.)

A statement of the changes introduced into the Russian Customs Tariff has been issued by the Board of Trade. The following particulars relating to textiles are given:—

No. of Article	Description of Goods.	Unit.	Former Duty. rbl. cop.	New Duty. rbl. cop.
189	Linen and batiste:—			
	1. Linen bleached and unbleached, of flax and hemp of every kind, mixed or not mixed with cotton, excepting tissues specially mentioned		33 p. c. ad. val.	0 70 per funt
	2. Batiste and lawn of pure flax or hemp, or mixed with cotton		,,	1 50 per funt
	Observation. — Linen and batiste dyed, printed, and woven of different colours, also pocket handkerchiefs of linen and batiste, pay the same duties with an addition of 20 per cent. Handkerchiefs of every kind marked and embroidered, and bordered with lace, pay duty under § 219, pt. 2.			
190	Flax and hemp tissues, twilled or with woven patterns, mixed or not mixed with cotton, such as table linen and towels of every kind	funt	0 71½	0 70
191	Drills of every kind	,,	0 49½	0 50
192	Sailcloth, ticking for bedding and for furniture, carpet textures of flax, hemp, and jute, &c., and similar stout flax and hempen tissues, mixed or not mixed with cotton ..	,,	0 16½	0 17
194	Wax and oilcloth of every kind (except of silk admitted under § 200), and manufacturers of the same; also canvas with prepared ground for painting	,,	0 12	0 12
	Hempen hose for fire engines, hempen buckets, and tarpaulin	,,	0 1	0 12
198	Stuffs, scarfs, and ribbons of mixed silk (with warp or woof of any other material), as well as of bourre de soie with admixture of cotton, flax and hemp	,,	2 42	2 44
201	Flannel blankets and woollen horse cloths ..	,,	0 44	0 44
	Note in former Tariff omitted.			

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202 Woollen stuffs of every kind of wool and goats' hair, milled and unmilled, plain and embroidered and woven in different colours, with or without admixture of cotton, except those specially mentioned in § 201, 204, and 207	,,	From 0 55 to 1 21		0	90
203 The same, printed, pay duty under § 202 with 30 per cent. additional.					
General Observation to § § 202 and 203.—Unmixed stuffs of combed wool and goats' hair, having a woof or warp of silk or silk waste pay as silk goods; but if the admixture of silk or bourre de soie consists only of patterns or stripes woven in or embroidered, such goods pay 20 per cent. in addition to the duty under § § 202 aud 203.					
2 Handkerchiefs, scarfs, rugs, plaids, &c., of woollen stuffs and goats' hair, except those specially mentioned in § 205, pay the same duty as the material of which they are made.					
204 Bunting, white woollen stuffs for millers' sieves, and sashes of wool of every kind without admixture of silk	,,	0	24	0	25
207 Woollen carpets of every kind..	,,	0	33	0	35
208 Fezes or Turkish caps of wool embroidered or not with spangles	doz.	1	98	2	0
210 Cottou tissues, grey, bleached, dyed, (except those dyed Turkey red) and woven ot various colours:—					
1. Having up to 8 sq. arshins to a funt ..	funt	0	30	0	31
2. Having from 8 to 12 sq. arshius to a funt	,,	0	41	0	42
4. Having moor than 16 sq. arshins to a funt	,,	0	21	1	20
211 The same printed or Dyed Turkey red:—					
3. Having from 12 to 16 sq. arshius to a funt	funt	0	82½	0	83
212 Cottou velvet, plush and plush ribbons ..	,,	0	49½	0	50
213 Cotton galloon or braid, knitted and plaited goods of every kind, chenilla and articles of chenilla, cotton canvas without embroidery or with embroidery commenced, with exception of buttons (§ 220), of net (§ 214), and of lace (§ 215)..	,,	0	38½	0	40
Observation.—Galloon work of flax or hemp pays duty under this section.					
214 Tulle (net):—					
1. For turuiture (antigras) with patterns woven in or embroidered, and curtains of net or muslin	,,	0	44	0	45
216 Cotton textures of Turkish origin without any admixture, such as borla of every kind Kindiak basma Kumatch, Charsav Chember, and other coarse cotton stuffs, as well as Turkish towels and sashes, Chember handkerchiefs, Pashtemali and Manidjaladja, common, and articles made of such stuffs ..	,,	0	5½	0	6

The Cotton Manufactures of China.

That the Chinese were acquainted with the properties of cotton before they began to cultivate it for themselves, is proved by passages in various historical works. In the "Book of Historical Documents," reference is made to the cultivation of cotton during the dynasties of Sung and Yuen (A.D. 1127-1333). The province of Kwang-Tung and Fo-Kien were the principal homes of the industry at the time of its establishment, which is fixed, by the annals of the empire, as having taken place during the Yuen dynasty. This assertion would give the event a date anterior to A.D. 1333. The statements of different writers as to the districts in which the plant was at the first successfully cultivated, do not, in all cases, coincide, but the date of its introduction seems generally agreed upon as being about the commencement of the 14th century of our era. Some interesting details as to the present mode of cultivation are afforded by the *Central-Blatt für Textil Industrie*. The plant is usually grown in fields where wheat and barley have previously been cultivated. Sowing takes place in June, and the plant soon makes its appearance, but seldom attains a height of more than a foot and a half. The leaves are dark green, and the blossoms (which appear in August) are yellow. Women and children gather in the crop in baskets. The cotton is subsequently passed through two wooden rollers. Before being spun, it is spread out on the ground, and is cleaned by means of an instrument specially adapted for that purpose. It is spun into yarn by means of a primitive spinning-wheel, such as is found in most cottages in China. The looms are served by men and women; in those districts considered as centres of the industry, a large proportion of the population is employed in cotton weaving. The material known as Nankin (so designated after the city where it was first manufactured), is a favourite and durable product of Chinese looms. The extent of the cotton industry has notably increased in Hankow, an important city in the province of Hoo-Pah. It must not be forgotten that the ordinary Chinese wear cotton all the year round. A complete suit costs about five shillings, and lasts for six months. In winter, these cotton suits are wadded or several suits are worn, one above another. The lining is a description of coarse towelling drill, which is woven by the Chinese so as to resemble a kind of white fur. Cotton velvet is an important feature of the Chinese textile industry. It is a soft and durable material, and is usually made of a dark blue colour; it is dyed in a solution of one part indigo, to thirteen of water, with a small admixture of wine and lime. The velvet lies for half an hour in this solution; it is then wrung out and dried in the sun. The tissue is subjected to this process no less than eleven times. It is subsequently damped by a workman, with slightly acid water, which is let fall on the material in the form of a fine rain. The calendering is done in a somewhat primitive fashion, but is successful in giving considerable brightness of appearance to the material Prussian blue is sometimes used instead of indigo. This article was at one time imported, but the Chinese now make it themselves, the details of its manufacture having been learned by a Chinese sailor when in England. It now constitutes an important feature of Chinese industry. The seeds which are not used for sowing purposes, are employed in the production of oil, and have also a certain amount of medicinal repute among the Chinese.

SCIENTIFIC AND ART NOTES.

A gallery of modern art has been instituted at Rome under the countenance of the King; and the government have voted a sum of £4,000 a-year to keep it up, and for the purchase of pictures by living artists.

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Mr. Thomas Armstrong and Mr. H. Bowler, of the Science and Art Department, have been instructed to visit the art schools of Germany and the industrial exhibition at Nuremberg, and to prepare a report on German art teaching.

* * * *

The French state is preparing a series of tapestries for the grand staircase at Luxembourg: eight will be made at the Gobelins, and four at Beauvais. An interesting feature of one will be that the design as well as the tapestry will be executed by M. Maloisel of the Gobelins factory. Usually the work to be copied is executed by some painter of note.

* * * *

Among new adventures announced is "The Albert Exhibition Palace Company, Limited," formed for the purpose of acquiring the Dublin exhibition palace, and erecting it, with additions and improvements, on a site adjoining Battersea Park, for the purpose of periodical exhibitions of industrial, agricultural, and other products, machinery, fine arts, &c. Sir Edward Lee, of the Art Furnishers' Alliance, is managing director.

* * * *

At the meeting of the Institution of Mechanical Engineers at Leeds, on the 16th of August, Mr. Fletcher gave a demonstration of his discovery of flameless combustion, and read a paper on "Fuel Utilisation." He said that the subject of flameless combustion had created considerable disturbance in the minds of many. In his experiments his efforts had been turned to the reduction in the size of flames; and he found that under the most perfect conditions the flames would disappear. It was quite evident the flame and smoke had no connection with combustion further than an accidental one. The experiments he had made ensured not only the complete disappearance of black smoke nuisance, but also perfect combusion of the whole of the fuel, instead of the production of poisonous carbonic oxide.

* * * *

A new kind of Steam Engine has been recently patented in Austria. The so-called "steam-wheel" (according to the account in the *Polytechnischer Journal*) consists of a simple water-wheel, mostly immersed in hot water in a closed vessel. Steam is admitted at the lower part, and forces the cells of the wheel upward, producing rotation. The steam fills more and more of the cells on the rising side, and at length begins to escape into the steam-space above the water. Steam may either be produced directly at the lower part or conducted to the vessel from elsewhere. The upper tube for outlet of steam may lead either into the open air or into a condenser. The mechanical work consists in the ascent of the specifically lighter steamer in the heavier liquid. These steam wheels may either be used as independent motors or in connection with ordinary steam-engines; in the latter case the escape steam of one kind of machine is utilised for the other.

ORIGINAL DESIGNS.

The first design is from the pencil of Mr. S. Garforth, Lintlefield Terrace, Ovenden, near Halifax, and is drawn specially for a Royal Axminster Carpet. The colouring of this fabric should be as follows :—The ground a Dark Maroon, part of the flowers to be treated with Ivory White and three shades of Pink, and the remainder with Ivory White and three shades of subdued Blue ; the leaves to be in Olive and Sage Greens ; the berries in Carnation, with the stems in two Browns shaded with Olive Green. The broad band in the border should have the ground Ivory White, and the flowers may be treated in the same colours as the body, with the omission of the White. Although this design has been drawn for a Royal Axminster Carpet, it may be adapted to a variety of purposes, such as a Tapestry Table Cover, or a Silk Damask Hanging, &c.

* * * *

The second plate is a simple pattern for an Alhambra Quilt, and has been designed by Mr. R. Lord, Gerrard Street, Halifax.

* * * *

The third design is also by Mr. R. Lord, and will be suitable for a Cretonne or Tapestry Fabric.

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*** We beg to inform manufacturers and others that adaptations of designs, published in the "Journal of Fabrics," can be made at the Office by experienced Designers, and that Original Designs can also be furnished at moderate charges.

* * * *

Numerous inquiries having been made for back numbers of the Journal, we beg to inform our readers that all the numbers from the commencement to July are out of print. We have however reprinted our designs and have a stock of 18,000 copies on hand, which we shall be happy to supply in the order in which they were originally published, at 6d. per set, each set representing one month's issue.

MONTHLY TRADE REPORTS.

Wool.—At the London Wool Sales which commenced on the 22nd ultimo, a fairly active spirit has been shown by the buyers. A large quantity has been sold of which the better qualities have realised rates on a par with the closing prices of the last series, but inferior sorts have been in favour of buyers. As at present arranged the sales will last until October 6th. In Bradford and Halifax trade has been of a variable character, although prices keep firm. Towards the end of the month English Wools improved slightly in demand. Botany and Colonial wools sell fairly at firm rates. In the Yarn and Piece trades rather more has been done, but purchases as a rule are made only in limited quantities. Trade on the whole is better than it was three or four months ago, and manufacturers show confidence in the future.

Cotton.—There has been a steady demand for the raw material and prices have advanced far out of proportion to those obtainable for the manufactured article. A slight slackness in demand was observable towards the end of the month, prices giving way slightly, owing to the nearer approach of the new crop. In the Yarn and Cloth departments the business done has been of a very unsatisfactory nature, both as regards the turnover and the range of prices procurable. Stocks of nearly all classes of goods are accumulating rapidly, and manufacturers are being placed in a most unenviable position in consequence. Any attempt to obtain increased prices has a tendency to further curtail business.

Woollen.—Trade in Leeds and Huddersfield has been of a favourable nature. Worsted Coatings of good quality and plain patterns, have been in good demand and there has also been a large business done in tweeds for various kinds of suitings. The trade for export has been of a very satisfactory kind, the shipping firms being busily employed on a great variety of goods. Orders are still to be had at about the usual rates. Prices keep firm for new goods of all classes.

Linen.—In the Scotch Linen districts an improved feeling has pervaded the market in all the departments ; larger quantities of the manufactured article has passed through the market, although it has been with difficulty that higher prices have been realised. The yarn market has a firm tone ; spinners, as a rule having light stocks, are procuring better prices, and refuse to book orders at the old rates. In Barnsley some descriptions of goods, especially light linens, sell moderately well at fairly remunerative prices. The demand for damasks has only been indifferent. The export trade is not of a very pleasing character, although advices from America are of a more favourable character.

Carpets.—The trade at Kidderminster has been of an extremely quiet character during the past month. What stability there was in the market a few weeks ago seems to have entirely disappeared, owing to the failures that have taken place. Prices for the autumn season have not yet been fixed. In the Dewsbury district a slightly better state of things exist, and the outlook is not unpromising. For the raw material higher prices are being asked, and in the majority of cases are obtained.

Lace.—This branch of the textile trades has been rather dull. In curtain materials a fair amount of business has been done at old rates, but the sales in other departments have been much below the average and prices have in consequence had a tendency to give way, but to no quotable extent. Where manufacturers run full time they are accumulating stocks. Although such a quiet feeling pervades the market, manufacturers are hopeful of an improved order of things shortly.

Uninflammable Fabrics.

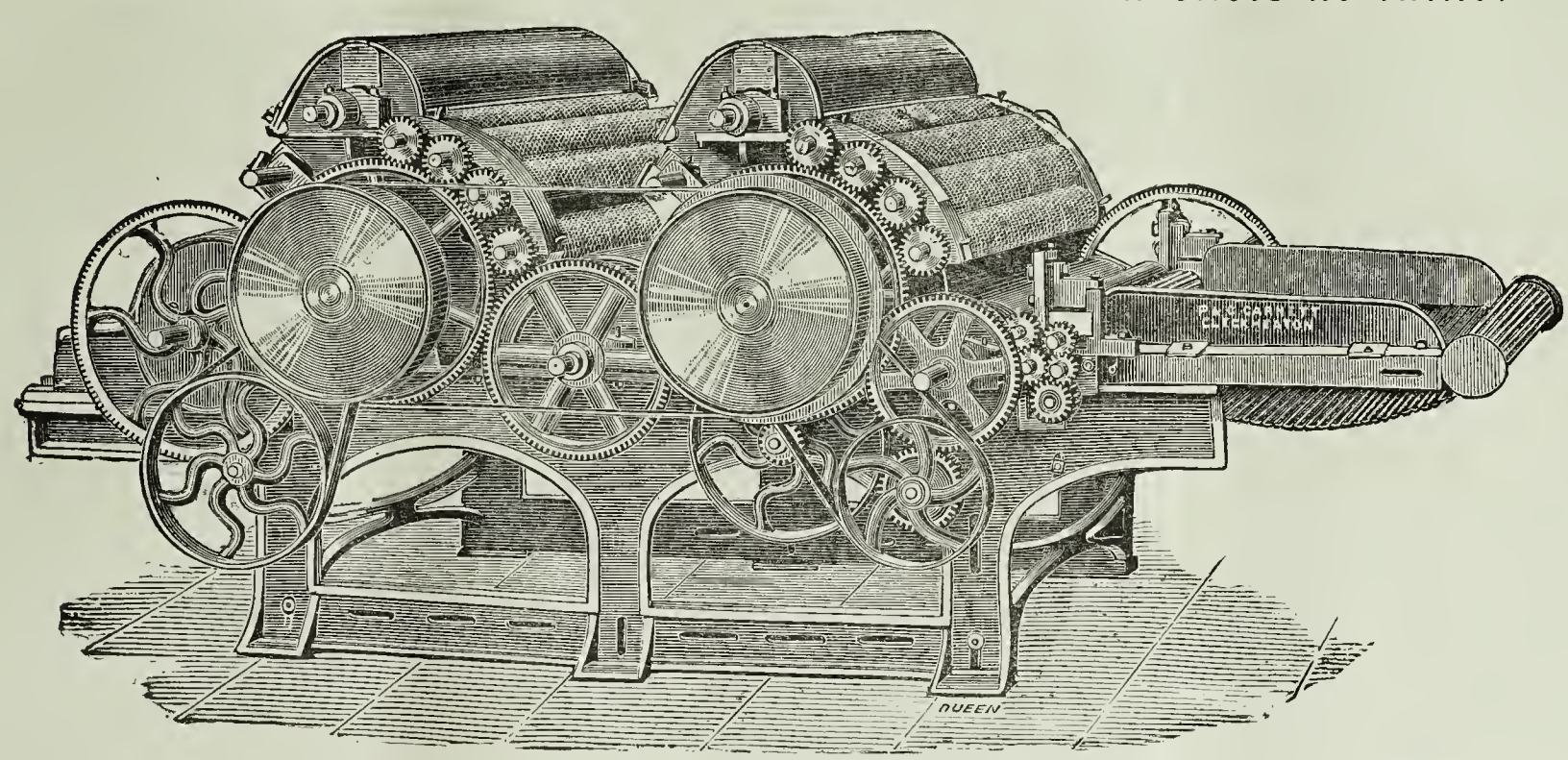
The rendering of fabrics uninflammable has for many years past occupied the minds of a number of scientific men, whose attempts have been made not so much from motives of gain as from motives of humanity : but although many fabrics having incombustible properties have from time to time been put upon the market, especially the light gauzes used in theatrical properties, they have for various reasons either been untried owing to a prejudice against them, or have had a trial and have then been discarded. A patent, taken out some months ago for the purpose of rendering all descriptions of fabrics uninflammable, runs as follows :—

The materials are impregnated with a solution of salts having incombustible properties. These salts are gluco-saccharine or molasses borates, gluco-saccharine or molasses phosphates, gluco-saccharine or molasses silicates, gluco-saccharine or molasses-tungstates, soluble or insoluble bases (especially the molasses borate of lime), the succrates glucates and melanates of potash soda, ammoniac, magnesia alumine and the like, but especially of lime with the addition of boracic, phosphoric, tungstic, or silicic acids but especially boracic acid. The gluco-saccharine or molasses borates are obtained by heating to boiling point the saccharine glucosed or molassed solutions from 5 to 15 degrees Beaumè in the presence of the borates as above indicated. The proportions of the borates are to be at hot saturation, that is to say that the proportions of the borates are those which the quantity of saccharine glucose, molasses and other solutions can dissolve by heat. In cooling, a part of the borates crystallize if the solution is very concentrated, but the mother water contains all the saccharine glucose or molasses borate that any given quantity of sugar glucose or molasses employed in presence of an excess of borate could combine. This solution is either by evaporation if the solution is not sufficiently concentrated, or by addition if it is too much so, brought to 10 degrees Beaumè and then employed by dipping or steeping therein the fabrics to be rendered uninflammable (or by coating the surfaces) at a temperature of about 30° centigrade. If the materials are only painted with the solution it is used cold. These salts remain soluble in addition with the saccharine and remain uncrystallizable when the water is evaporated. In a word, the saccharine glucose or molasses borates impart solubility to the borax or even to the borates of lime, and permit of being held in solution in the water combined with the saccharine materials considerable masses of borates and as these saccharine combinations are so to say uncrystallizable, they cannot crystallize in or on the articles impregnated which would at once produce these borates and soluble borates are referred to employed in boiling or hot solution.

MACHINE "GARNETT"

For Opening Hard Twisted Woollen and Worsted Waste.

À ouvrir les laines fortement frisées et les dechets de laine.



These Machines are guaranteed to be of the very best quality, both as regards material and workmanship, and possess many recent improvements.

We beg to announce that we have just obtained

ROYAL LETTERS PATENT

For improvements in these Machines, whereby we are now able to put 14, 16, and even 24 rows of teeth per inch on to the cylinders, whereas formerly we could not exceed 12 rows per inch.

Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux.

Nous venons d'obtenir

UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu 'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu 'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, Sole Patentees, Cleckheaton, Yorkshire,

WHO ARE ALSO MAKERS OF

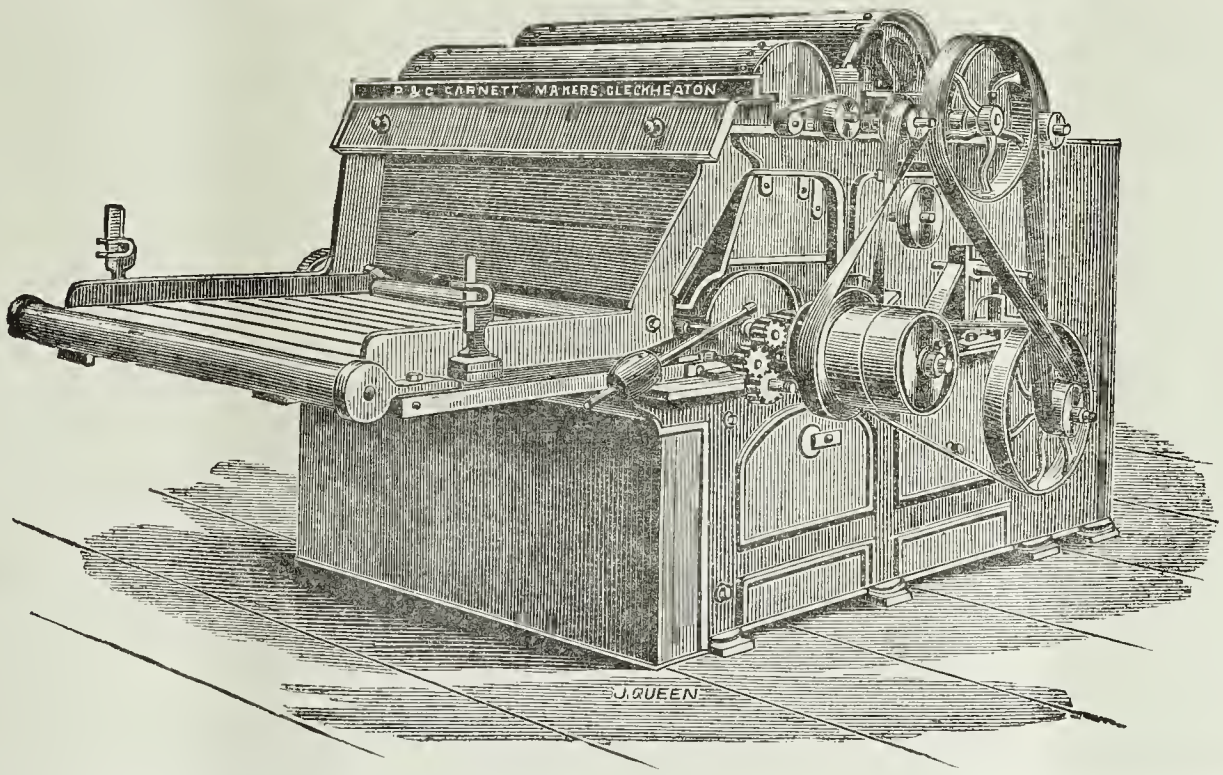
GARNETT'S PATENT COTTON GIN,

Unequalled for fast Seed Cotton.

NOUS CONSTRUISONS AUSSI

L'EGRENOIR BREVETÉ DE GARNETT

Sans rival pour la préparation des cotons á graine dure,



IMPROVED WOOL CLEANING AND BURRING MACHINE,

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and

TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

Stalybridge, May 9th, 1877.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than *twenty years*, and am very much pleased with the working of it. Its advantages are that it is much *cleaner* and *less costly* than leather or any other covering.

LA MACHINE PERFECTIONÉE À NETTOYER ET ÉCHARDONNER LES LAINES,

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construison aussi

LES CARDES MÉTALLIQUES BREVETÉES DE GARNETT,

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée

LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

Stalybridge, 9 Mai, 1877.

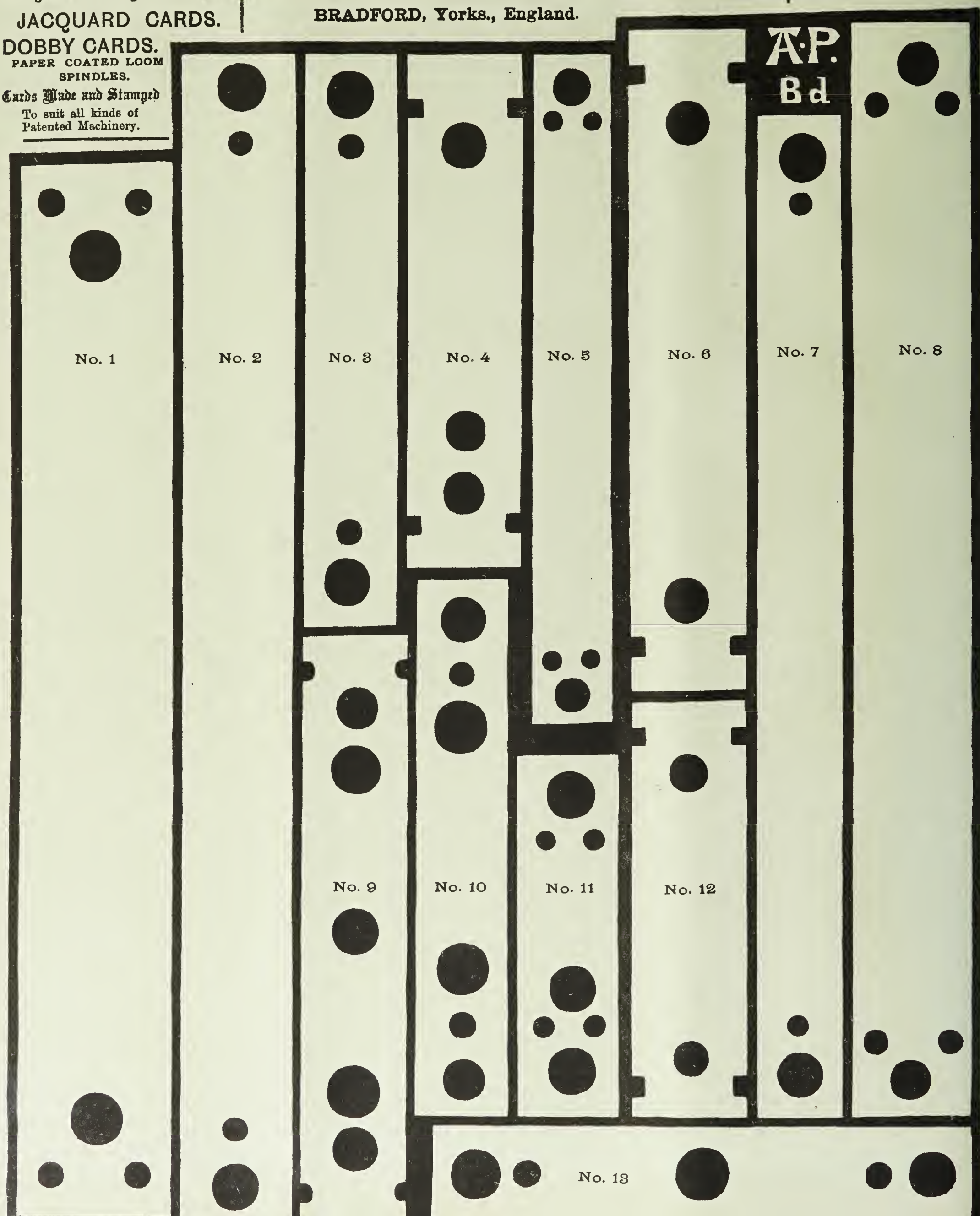
En réponse à votre lettre du 7 ct. j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

Manufacturer of
HARD BLUE
CIRCULAR BOX CARDS.
Hodgson's Shedding Motion Cards.
JACQUARD CARDS.
DOBBY CARDS.
PAPER COATED LOOM SPINDLES.
Cards Made and Stamped
To suit all kinds of Patented Machinery.

THE WEAVING CARD MANUFACTORY.
ANTHONY PYRAH,
ST. THOMAS' PAPER WORKS,
ASHTON STREET, CROPPER LANE, OFF THORNTON ROAD,
BRADFORD, Yorks., England.

Cards Cut Plain or Stamped, with Peg and Lace Holes as below, without extra charge.
Card Board supplied in Sheets to any size or gauge.



 DESIGNED BY S. GARFORTH.

R. LORD.

DESIGNED BY R. LORD.

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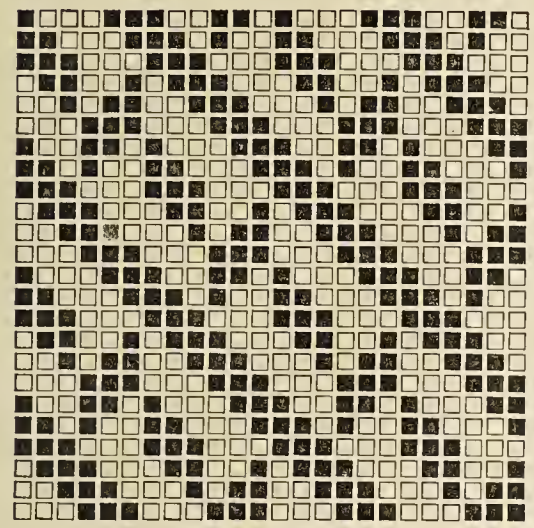
ORIGINAL DESIGNS.

For Coatings, Trouserings, and Suitings.

No. 11.



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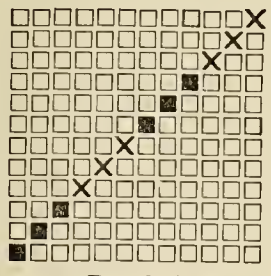

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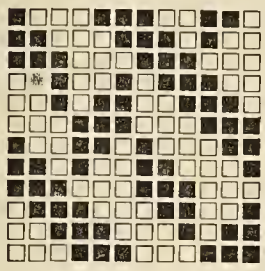


Pegging Plan.

No. 11 is a Design for Trouserings and Suitings,

Warp: 3 threads * X Grey
3 ,, ■ Black
3 ,, Olive Brown
3 ,, Black

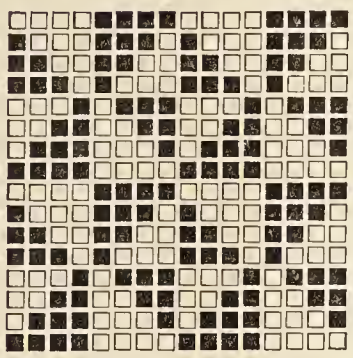
12 ends in pattern.

Warp Yarns: Grey Single 3840 yards.
Black Single 3840 yards.
Olive Brown Single 3840 yards.

Weft: Plain Dark shades, such as Black, Dark Grey, Brown, Slate, &c., in single yarns at 3840 yards.
Reed 15: 3 threads in a reed.
42 picks per inch.
65 inches wide in the loom.
56 inches wide. Clear finish.

No. 12.

No. 12 is a Design for Worsted Coatings and Trouserings.



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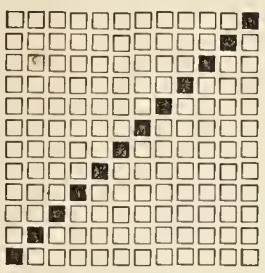

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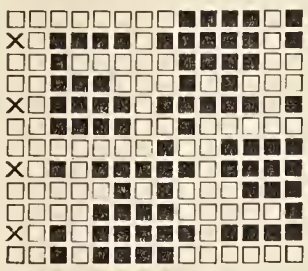


Pegging Plan.

Warp Yarns: A. Dark Brown Worsted 2 fold, 13440 yards.
B. Black ,, ,, ,, ,,
C. Dark Sage ,, ,, ,, ,,
D. Black Woollen Backing, single, 4608 ,,

Worsted Warp dressed in one beam 3640 threads face.
1 thread A.
6 ,, B.
1 ,, C.

8

D. to be dressed on one beam 1820 threads backing.
Total threads in warp 5460.

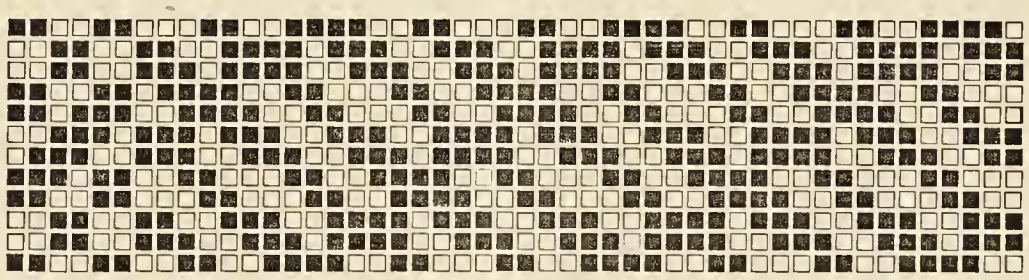
Draft: 1 thread A
1 ,, D
2 ,, B
1 ,, D
2 ,, B
1 ,, D
2 ,, B
1 ,, D
1 ,, C

12

Weft: Black Worsted 2 fold 13440 yards face.
Black Woollen single 2560 ,, backing.
2 picks face.
1 ,, backing.
The backing pick must always be thrown in shed marked x in the pegging plan.

Reed 14: 6 threads in a reed.
81 picks per inch.
65 inches wide in the loom.
56 ,, ,, clear finish.

No. 13.



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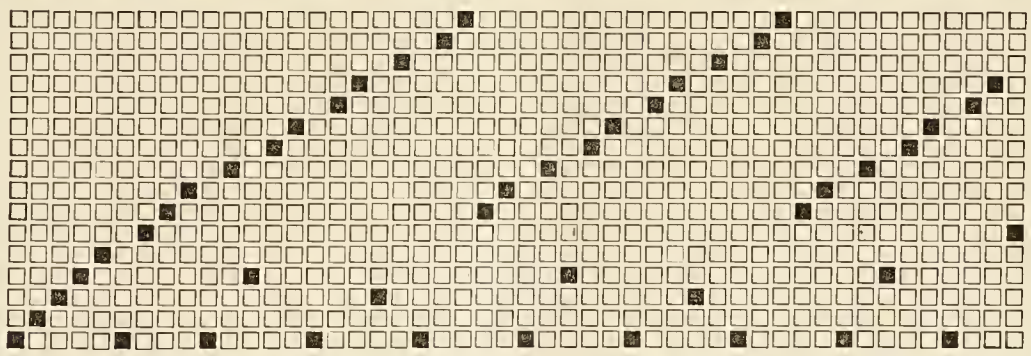

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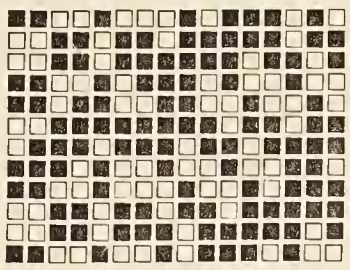

Pegging Plan.

No. 13 is a Cross-over Stripe for a Worsted Coating and is a 48-end Pattern drafted to weave with 16 shafts.

The German protectionist press lends special prominence to the recently published report of the Colmar Chamber of Commerce on the Alsatian cotton trade. This report attributes the decline of the Alsatian fine-spinning industry to insufficient protection, and points out that prior to the annexation of Alsace by Germany manufacturers in the province were much more largely engaged in the fine-spinning industry than at present, the protection afforded them by French customs tariff being much more adequate than that granted by the German tariff, which does not suffice to keep out the competition of Swiss and English cotton spinners. An advance of the duties on fine yarns and tissues to the elevation of the French tariff is therefore urgently demanded.

MACHINERY, TOOLS &c.

The New Positive Universal Temple.

Our attention has been drawn to a new positive universal temple which has recently been patented by Mr. John Hardaker, Temple Maker, Grace Street, Leeds. The temple is at work at the Bradford Technical School Exhibition on a loom for weaving woollen cloths. The many disadvantages attending some of the makes of ring and segment temples are in this apparatus obviated. The damage often caused by the pins, especially in the making of fine materials, is a source of great annoyance to manufacturers generally, we are sure that they will heartily welcome any improvement that may be brought before their notice which will reduce the annoyance to a minimum. The patentee claims for his invention the following advantages *viz.*:—that being positive in its motion it will temple to any required width, and as near to the shed as desirable, with perfect templing all across the cloth; that it grips the selvage only and as much as is required; that it is free from rubbing, marking and other damaging propensities; that the selvedge being in the same plane as the cloth obviates all saging; that its general application and adaptability is to various kinds of cloth as well as looms; that it is simple and easy to manipulate, especially in picking back and readjusting and that the shuttle-trap provision is complete. Mr. Hardaker has furnished us with the following detailed description and illustrations of the temple:—

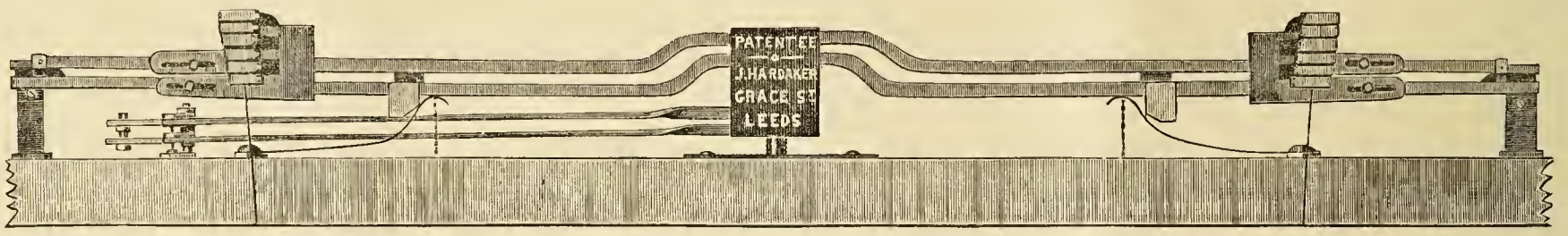

Fig. 1 is a plan view of the temple, the piece of course, which is above it, being removed, showing the mode of attachment to the breast beam A. The action is the same as if the selvages for a space of about 4in. from the reed or shed were pulled outwards by the fingers. This is done by a series of clips, one of which is represented in Figs. 2 and 3, there being six of these clips at each side of the loom (or more or less as required). The clips are carried by the bars E E1 and F F1, each bar having three clips. Those in the bar E alternate with those of F, and similarly with the clips on the other side. The bars E E1 have an endwise movement, received in a simple way from the going part of the loom, and from each other, so that the clips attached to their ends approach nearer or recede further apart. The clips on the bars F and F1 have a similar motion, which, by the way, alternates with that of the other clips. The action of the contrivance will now be easily understood. Taking the clip (Figs 2 and 3), suppose it be placed over the selvage of a piece of cloth, or, to illustrate the action, over the edge of a piece of paper, and pulled outwards, it will immediately bite the substance between its fingers, the grip tightening with the increase of force. If pushed inwards the grip is at once loosened. Now in the temple (Fig. 1) the clips are moved inwards and outwards in this manner, the action of the bars being such that whilst three pairs of clips are keeping the piece stretched in the width, the other three advance to grip a fresh place, and recede outwards to effect the templing. This proceeds alternately, the movement of the clips being arranged to take place every four picks (more or less as required)—that is to say, for the period of three picks the piece is being held by all the clips on each selvage, then during the period of the fourth pick the three of the clips on each side release themselves from the selvage, but grip it again in a fresh position.

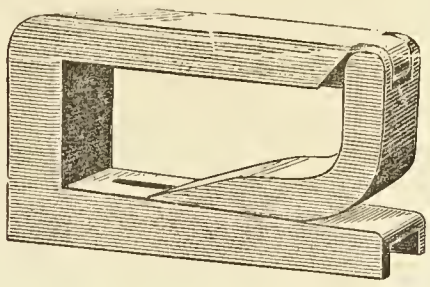

Fig. 2.

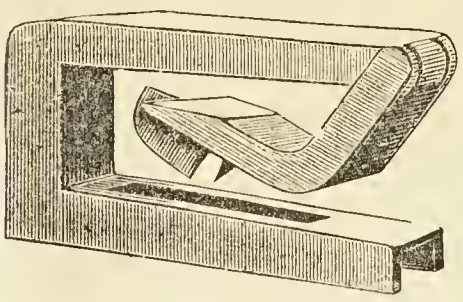

Fig. 3.

The temple at the Bradford Exhibition is doing its work in every respect satisfactorily and is exciting a great amount of interest amongst all classes of textile fabric manufacturers.

Messrs. P. and C. Garnett's Waste Opener and Burring Machine.

In our last month's issue we gave a detailed description of the three swift waste opener, which is being exhibited at the Industrial Exhibition at Bradford, by Messrs. P. and C. Garnett, machinists of Cleckheaton. In addition to the above machine, they are now showing a smaller waste opener, a wool burring machine, and a roller clothed with saw teeth wire. The waste opener is 48 inches in width, and has two fluted and two toothed feed rollers of 2½ inches diameter; two lickers-in 9 inches diameter, one swift 20 inches diameter, and a doffer 26 inches diameter, heaving over the swift four workers 4 inches diameter, one fancy 9 inches diameter, and a stripper 6 inches diameter. The machine is admirably adapted for the opening of the various kinds of woollen and worsted waste, and for the opening of knitted goods, such as stockings, comforters, shawls, jerseys, &c., it is invaluable. It is also specially adapted for all wool soft rags, such as flannels, merinos, &c. The whole of the above enumerated articles it is guaranteed to deliver free from threads, and having the appearance of carded wools. We understand that previous to the patent for this machine being taken out, a large quantity of material, which at present is valued at from 10d. to 1/8 per lb., was considered almost valueless, and only fit for the dust-heap.

The wool-burring machine, which is shown, is 25 inches wide, and consists of a pair of fluted feed rollers, which pass the wool on to a beater, working over a grate through which the loose pieces drop. The beater then throws the wool on to a lattice, from which it is picked up by a large brush, which revolves slowly; that in its turn puts the wool on a large iron cylinder, which has 60 brass gills set into its periphery. A revolving knife works against this cylinder, which, making 1,500 revolutions a minute, knocks off all the burrs from the wool; the latter is finally stripped off the comb cylinder by another revolving brush, and delivered free from burrs and dirt, with the staple of the wool uninjured. The machine has an arrangement by which any pieces of wool, which may chance to have been knocked off the comb cylinder by the revolving knife roller, is returned to the feeder sheet, and consequently passes through the machine again. The machine is capable of cleaning 700 lbs. of wool per day; but Messrs Garnett manufacture them to clean as much as 1,500 lbs. per day of the ordinary working hours. This firm claims that the machine does its work in a more thorough manner, with less injury to the wool in the working, than any burring machine at present in the market.

A roller clothed with metallic saw-tooth wire is also exhibited. It is 60 inches wide and 11 inches deep, and has 24 rows per inch of the teeth placed on the roller by a new system which is patented.

The Shawl Manufacture in Germany.

The official report on the progress of the textile industry of Berlin during 1881 contains an interesting chapter on the shawl trade. The disfavour into which this article has fallen of late years, on account of the prevailing European fashions being opposed to its use, has not apparently injured its exports to distant countries, where the ordinances of M. Worth and his coadjutors have little or no influence Chili was at one time relatively the largest buyer of Berlin shawls The war between that country and Peru diminished for some time the importance of this trade, but the new impetus to commercial activity afforded by the victory of Chili and by the subsequent restoration of peace, has had a satisfactory influence upon the trade relations of that country with Germany. The Brazilian orders were not so large, and business with the United States did not attain a figure of any great importance. While plain cashmere shawls were bought for all these markets, Brazil and the United States were the only ones of those referred to which took up novelties and fancy styles. A special description of shawls for native use has been for many years shipped from Berlin to the East Indies. The old style of Indian hand-weaving has been successfully imitated by some manufacturers, and the low price at which the goods are produced ensures them a large and permanent sale. The exports to European countries were only on a moderate scale of importance, the business with the Scandinavian natives being about the same as in 1880. Russia took a smaller quantity than previously, owing to the gradually increasing effects of the protective fiscal policy of that country. Trade with Italy was somewhat more extensive, this improvement being in some measure attributed to the more favourable position of the exchange between the two countries. The home consumption of Germany shows a reduction, as might be expected from the present course of fashion. The production of cotton chenille shawls has diminished in importance, as many foreign countries have ceased to purchase this article. The east coast of South America continued to buy this class of shawls, but at prices leaving no profit. It is remarked that Russia and Eng-

land took considerable quantities, but the German demand was throughout the year of a very limited character. The better qualities of long shawls have not gained in public favour, although protected by a high duty, the manufacture of lower grades having been on a scale of relatively greater importance. The total value of woollen, union, and cotton shawls produced by the Berlin industry in the course of the year amounted to £600,000. About 3,000 looms were employed. The exports are estimated at two-thirds of the entire production. Notwithstanding the diminished importance of the home trade and of European consumption in general, the increase of business with certain transoceanic markets makes the entire sum for 1881 rather more than that recorded for 1880.

The Treatment of China Grass, &c.

China grass and other fibre-producing plants are generally cultivated at long distances from the localities where the fibre is prepared for the market. The plants are cut down and transported across the country to the scutching mills. This gives rise to two evils: in the first place about a ton of raw woody material is transported to produce 1½cwt. of fibre; and, in the second, the gum in the grass becomes dried up during transport, and the separation of the fibre from the wood and epidermis is rendered both difficult and expensive. In order to remedy these defects and to cheapen the production of fibre generally, a simple and inexpensive process has been devised by M. Favier, and is being introduced into England by Messrs. Brogden and Co., of 40A, King William Street, London. This process consists in steaming the fibre-producing plants at the place of culture and sending only the epidermis with the fibre attached to it across country to the mills. The process was shown in operation a short time ago at the works of Messrs. Middleton and Co, in Southwark, and was witnessed by General Hyde, of the India Office, and a number of other gentlemen interested either in the production or use of the fibre. The apparatus employed is very simple and inexpensive, consisting merely of a stout deal box or trough 8 feet long by 2 feet wide and 20 in. deep. This box has a false bottom, under which runs a ¾-inch iron steam pipe, connected with a boiler, and having perforations. At the bottom of the box at one end is an outler for the condense water from the steam. Into this box a numbet of specimens of fibrous plants were put, including two kinds of China grass, the Althæa or mallow, the black and white mulberry, hemp, and flax, the samples having been obtained from the botanical gardens at Kew and the Jardin des Plantes at Paris. The lid having been closed, steam at a low pressure was turned on, and in twenty minutes the specimens were found to be in excellent condition for stripping the epidermis with the fibre from the wood, the gum having been partially dissolved and the samples properly softened. The general opinion of those present was that the process as such was a perfect success. It is stated that the cost of producing the fibre ready for the scutching machine is only £2 per ton. The results point not only to the reduction of the cost of preparing the fibre in connection with the existing fields of its culture, but in utilizing vast tracts of arid waste land which are available for, and adapted to its cultivation, but which are so far removed from the mills as to be at present useless. The question of fuel for raising steam does not arise, inasmuch as the wood of the plants can be used for this purpose after separation from the epidermis, if no other local source of fuel exists. It is intended in practice to attach a small steam-producer to each of the steaming boxes, and to employ juvenile labour largely in the process. The matter is of interest to our colonists, and other things being equal, M. Favier's invention will doubtles prove of great value in connection with the fibre trade generally

The industrial activity of Switzerland in connection with the embroidery trade is too well known to need detailed proof. It is evident that Swiss manufacturers in this branch are not going to rest on their laurels, but are determined to make further progress. An important step in this direction is the extension now being carried out of the special school of textile art at St. Gall, which is the central establishment of technical instruction for an industrial population of 50,000 workers.

Jute Velvet for Upholstering Purposes, &c.

Jute, which has during the past few years come to the front in the manufacture of fabrics, seems destined to come into greater prominence still, judging from the numerous specimens of materials that are now before the public It is now being utilised for the manufacture of the pile of velvets, the ground of which is made of cotton. It is admirably adapted for upholstering and many other purposes. At a recent meeting of the Technical Society of Riga, Professor C. Pfuhl produced some samples of the material, the tissue of which was very velvety, and had the appearance of the heavy velvets generally used for the above purpose. It has the great advantage of being proof against moths. The pile is made as in other velvets, the ground, as stated above, being made from cotton. When it comes from the loom it is printed with a pattern like curtains in the following manner:—The pile is pressed or embossed by means of hot plates or rollers from which the designs project. By these means a pattern is produced which shines like satin, the parts of the velvet not pressed remaining unaltered. The back of the fabric is damped with lime water to prevent the pile from rising; or a piece of linen is moistened with a weak solution of shellac in spirits of wine, and the velvet laid upon it and afterwards pressed. In the latter case a little of the shellac would pass into the cloth and firmly fix the pile so that water cannot possibly loosen it.

The Silk Industry in Japan.

Silk production gives very considerable employment to farm labourers in Japan, and as better processes of preparing silk are continually being introduced, and, consequently, a better article is produced, there is a greater demand for skilled labour, and increased wages are offered. Mulberry plantations are found in fifty of the sixty provinces, and the business of silk production is carried on in the house where the farmer resides. The mulberry leaves are either picked off by women and children and carried into the house, or the young branches, with the leaves on, are cut off and taken there, where the leaves are picked off, washed, cut up, and given to the worms. When the cocoons are ready for winding, that is also done by women and girls. To make an even thread requires experience, care, and skill, and such labour commands wages accordingly. Spinning, warping, dyeing, and weaving are all, more or less, skilled branches, and required skilled labour. The man who tends the trees commands ordinary farm wages, while the leaf pickers, winders, spinners, and weavers of plain cloth will get as much as 10d. to 1s. 8d. a day. Weavers of fancy-patterned goods are paid at a much higher rate, receiving as much as 4s., but this is very exceptional.

Carpets of Hair.

The manufacture of carpets and other similar looped, piled or corded fabrics made from hair, was the subject of a patent issued some months ago, but which received provisional protection only. The description deals first with the making of looped or piled carpets, and other fabrics as follows:—

The hair (by preference that of the goat) is spun by any known method, to form the pile or loop face of the fabric, and instead of weaving it with a single ground as usually practised, it is woven with a double ground. In order to do this a double warp of any suitable material is made that can be spun and woven, between which a pole warp is drawn, the shoot is thrown in the ordinary way to keep the pile or loop in its proper position, and the spun hair may be cut between the two warps so as to form two pieces of fabric without the loop; or it may be left uncut and be either with or without the loop. Beam or finger rugs may be made according to the above improvement. According to the second part of the Invention, to manufacture corded fabrics a warp of any suitable material is made to form the ground, and another warp formed of spun hair (by preference goat hair), so that the hair will form the face of the fabric instead of forming the face with drawn hair as at present practised. The shoot which forms the cord may be made of any suitable material. In order to form the face with spun hair as above, a shuttle instead of a hook, is employed. Or instead of forming the face with the warp as above the face can be formed with the shoot of spun hair by raising any number of threads, that is to say, one thread to sink and any number to rise, or *vice versa*, showing one face at top and the other at bottom.

Glasgow Technical College.

THE session of 1882-83 of the Weaving School in connection with the Technical College of Glasgow, was opened on the 4th inst. The proceedings, which included the distribution of prizes gained by students last session, took place in the hall of the institution, Well Street, Calton. Mr. Sandeman, in the unavoidable absence of the Lord Provost, was called to the chair. The Secretary submitted the report for the year, which bore that the receipts had amounted to £545 12s 10d., while the expenditure, exclusive of the payments for machinery, was only £421 7s. 6½d., leaving a balance of £124 4s. 3½d. as a profit for the year, being a great improvement on former years. For this favourable result the college was again indebted to the contributions of the original subscribers, including the handsome annual allowance of £150 by the Worshipful Company of Clothworkers, London. This progressively satisfactory result would, the report went on to say, encourage the trustees in their efforts to establish the printing and dyeing branch, in which they appealed for support to those chiefly interested. During the past session the number of students enrolled, including all classes, was 54; and the registered average attendance at lectures and work numbered 35 for the whole term. At the examination at the end of the session 20 students competed to obtain the college diploma.

The Chairman, before distributing the prizes, said he was happy to think that a large number of the students who came forward for examination had been successful in gaining not only the college prizes, but the prizes of the City of London Guilds, and he had received a letter from Mr. Philip Magnus, of the London Guilds, in which that gentleman expressed his pleasure at the Weaving School having been so successful last year, and hoped that the Guilds examination had stimulated it. The writer suggested an honours examination in weaving of a practical character, including designs, rating and pattern analysis, and composition, and he expressed a wish that the students could be induced to qualify for a full certificate by going in for department examinations in machine drawing and mechanics, or any two other subjects. Mr. Magnus, besides being secretary of the City of London Guilds, had the honour of being a member of the Royal Commission upon Technical Education. The Commission had issued one report, which was now in the hands of the public, and they expected to have another report ready for presentation to Parliament in May next. He (the Chairman) had also received a letter from another member of the Commission—Mr. Swire Smith, who, along with the other members of the Commission, expected to visit Glasgow soon, probably in the month of October. When they did come to the city he (the Chairman) hoped that among other places they would visit the Weaving School. Since last annual meeting the subject of technical education had made great strides in public opinion. He believed that the visit of the Prince and Princess of Wales to Bradford to open the very handsome school and technical college there had given the science of technical education as great a stimulus as their presence at a meeting for the promotion of music gave to the establishment of the College of Music. There was another matter he wished to refer to, and that was the appointment of a Commission under the Educational Endowments Act. They had every reason to hope that when their school should be able to put forward a claim for substantial support from the funds which might be at the disposal of the Commissioners for the purpose of supporting and encouraging secondary or technical education they would meet with a ready response. The Chairman concluded by distributing the prizes.

Mr. Dickson afterwards made a few remarks. He was glad to hear from the letter of Mr. Magnus that that gentleman had expressed a desire that the students of the Weaving School should take certificates for mechanical drawing and other two subjects, so that they might have in future years a full certificate. He (Mr. Dickson) dwelt upon the importance of this suggestion. —Others afterwards addressed the meeting.

The Metric System in Measures of Length and Weight.

At the recent inaugural meeting of the British Association, which was held at Southampton, the President in his address, speaking of the value of the metric system when applied to measures and weights, said—"It is to be regretted that this country still holds aloof from the movement initiated in France towards the close of the last century; but, considering that in scientific work metrical measure is now almost universally adopted, and that its use has been already legalised in this country, I venture to hope that its universal adoption for commercial purposes will soon follow as a matter of course. The practical advantages of such a measure to the trade of this country would, I am convinced, be very great, for English goods such as machinery, or metal rolled to current sections, are now almost excluded from the Continental market, owing to the unit measure employed in their production. Would it not be desirable that the British Association should endeavour to bring about the use in this country of the metre and kilogramme, and as a preliminary step, petition the Government to be represented on the International Metrical Commission, whose admirable establishment at Sèvres possesses, independently of its practical work, considerable scientific interest, as a well-found laboratory for developing methods of precise measurement?"

ODDS AND ENDS.

A discussion has being going on in Continental technical circles as to a priority of discovery claimed by two Munich physicians. They have, it would seem, found a means of reproducing Cyprian and other gold thread of like origin in such perfection as to be in no way inferior to the original filament, which forms such a conspicuous feature in mediæval ornamental tissues Their principle is the gilding of a kind of animal gut, the exact nature of which they seem to keep a secret at present.

* * * *

Attention is called in the German Technical press to a plant which, according to the most recent information on the subject, is likely to prove a somewhat formidable rival to jute for industrial purposes connected with textile manufactures. Its native continent is South America, and its botanical title is *Malachra capitata*. The fibres are eight to nine feet long, of a silvery tinge of colour, and have a pleasing silky touch. The cultivation of the plant is said to be unattended by any special obstacles, as it flourishes in a damp or almost marshy soil. The fibres are prepared for use in the same manner as those of jute, and it can be laid down at a low price in England.

* * * *

The Dublin Exhibition was opened on the 15th inst., in the presence of the Lord Mayor and Corporation of Dublin, the representatives of fifty Irish Municipalities, members of Parliament, Trade Societies, bodies of Land Leaguers and Home Rulers, and delegates from England, Scotland, and America—altogether numbering about four thousand. The Lord Mayor, who performed the ceremony, said that the success of the Exhibition was a tribute to the energy and self-reliance of the trades and working classes. It was not desired to exclude the productions or manufactures of other lands, but rather to encourage and develope their own.

* * * *

A meeting was held in the Manchester Town Hall on the 9th ult., under the presidency of Mr. Oliver Heywood, to further consider the proposal to adapt the Manchester Mechanics' Institution to the purposes of technical education, and, if approved, to give effect to the scheme. The chairman stated that promises of valuable pecuniary help had been received. He recommended the establishment of a guarantee fund, of moderate amount for three years. If, at the expiration of the first year, the scheme were found not to be working successfully, no more money would be called for; but if, on the other hand, the expectations of the promoters were found to be realised, the requisite funds would no doubt be readily forthcoming. A committee was appointed to confer with the directors of the Mechanics' Institution in relation to the matter.

* * * *

Hungary intends to promote the culture of silk within its borders. Experiments already tried have proved so satisfactory that instead of 1,059 persons engaged in the pursuit in 1880, there were nearly 3,000 in 1881, and the quantity produced in the same period had advanced from 20,000 lbs. of cocoons to about 83,000 lbs, which appear to show not merely increased numbers, but largely increased skill. A model school is now to be established, at which schoolmasters shall graduate in sericulture, and the Government has moreover defrayed the cost of nearly 30,000 mulberry trees, which grow as well in Hungary as they do in almost every other country and clime. These, it is suggested, should be planted along the public roads and on open land belonging to municipalities, so that Hungary boys—ahem!—will have good times of it when mulberries are ripe. But their thefts are already condoned even before committal, provided always that they will not interfere with the more valuable leaves.

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Miscellaneous.

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THE GAZETTE.

Adjudications of Bankruptcy.

Nicholl William, West View, Hopwood Lane, Halifax, rug manufacturer and salesman.

Liquidations by Arrangement or Composition.

Legg Thos. Rowland and Sidney Archer Legg, trading as Thos. Legg and Son, Bermondsey Street, Bermondsey, and Rye, Sussex, and Ashford, Kent, wool staplers.
Micklethwaithe George Daniel, Savile Town, Thornhill, Yorks, shoddy manufacturer.
Waddington William, Orchard Mill, Padiham, cotton spinner and manufactur.
Whittell Joseph, Beestone's Mill, Stainland, Halifax, woollen manufacturer.
Berry Joseph, Middleton Road and Bentgrange Mill, both Oldham, and Busk Mill, Chadderton, cotton spinner.
Hardisty William Hobson, Huddersfield, shoddy and commission agent, late woollen merchant.
Benton Ramsden, Deighton, and Vance's Buildings, Cloth Hall Street, both Huddersfield, woollen cord manufacturer.
Morrison James, jun., Hope Street, and Victoria Mills, both Low Moor, Yorks, worsted manufacturer (separate creditors.)
Morrison James, jun., and Oliver Fowler, trading as Morrison and Co., Victoria Mills, Low Moor, Yorks, worsted manufacturers and commission weavers.
Mellor J., and G. K. Stubbs, Sutton, near Macclesfield, silk dyers.
Tolson Alfred James, Clarendon Street, Wakefield, late Bedford Street, Bolton, cotton spinner.
Waddington William, and John Hargreaves, Commercial Mills, Padiham, cotton manufacturers.
Woodward Benjamin, trading as Benjamin Woodward and Co., Kidderminster, carpet and rug manufacturer.

Dividends.

Jennings William, and Charles N. Jennings, trading as William Jennings and Son (Liquidation) Bradford, worsted spinners. 2nd and final dividend, 1s. 1d.; B. Musgrave, Bradford, accountant.
Greaves John Frederick, and Thomas Fidoe, trading as Greaves, Fidoe and Co., Kidderminster, carpet and rug manufacturers.
Scott Thomas (Bankrupt), Eccleshill, near Bradford, wool stapler and top maker. 1st and final dividend, 7½d.; W. M. Gray, 16, Kirkgate, Bradford.
Shaw Richard B. (Liquidation), Rook Street, Manchester, worsted merchant. 1st dividend, 1s. 6d.; M. Preston, 21, Kennedy Street, Cooper Street, Manchester.
Bartlett Edward H. (Liquidation), Fitchett's Court, Noble Street, and Nunhead, late Willmott-mews, Bethnal Green, trimming manufacturer. 1st and final dividend, 6s.; T. Kennedy, 11, Old Jewry Chambers, accountant.
Mason Christopher B. (Liquidation), Bradford, Yorks, wool and waste dealer. 1st and final dividend, 1s. 8d.; W. M, Gray, 16, Kirkgate, Bradford.

Trustees Appointed.

Pemberton Richard H., trading as R. and H. Pemberton (Liquidation), Blackburn and Manchester, cotton manufacturer. Trustee, T. D. Cooper, New Cannon Street, Manchester, yarn agent.
Woodward Benjamin, trading as Benjamin Woodward and Co. (Liquidation), Kidderminster, carpet and rug manufacturers. Trustee, H. Preen, Kidderminster, accountant.
Dewhirst William, trading as William Dewhirst and Co. (Liquidation), Birstal and Cleckheaton, worsted spinner. Trustees, J. Rycroft, Piccadilly, Bradford, woolstapler, and F. Foster, Halifax, accountant.
Nicholl William (Bankrupt), Halifax, rug manufacturer. Trustee, J. S. Lees, Halifax, accountant.

Dissolution of Partnerships.

Astle T. and M., Wilne Mills, Wilne, Derbyshire, cotton doublers. Debts by Marcus Astle.
Barton Thomas and Sons, Chorley, cotton spinners and manufacturers. Debts by Frederick James Lightoller.
Evans W. and Co., trading as Samuel Evans and Co., Derby, cotton spinners and paper manufacturers. Debts by Walter Evans.
Rowe G. and W., 53, Cochrane Street, Glasgow, manufacturers. The business continued by Gavin Rowe.
Menzies and Patterson, Perth, linen manufacturers. Debts by William Menzies and Alexander Graham, who continues the business, and also at 5, St. Vincent Place, Glasgow, as Menzies and Graham.
Matthews W. E. and Co., Piccadilly, Manchester, silk merchants.
Nixon and Beedham, Nottingham, lace manufacturers. Debts by William Nixon.
Woodhead T. G., and A. Woodhead, Sheepridge, Huddersfield, woollen merchants.
Hand Esther, R. Taylor, and A. Hand, 467, Bethnal Green Road, London, gold lace manufacturers.
Carter J., T. Carter, and J. Carter, James Street Mills, Elland, Halifax, woollen manufacturers.

Sequestration.

Harris John and Co., Arbroath, waste merchants and general dealers, and John Harris, there, the sole partner, as such, and as an individual.

Bills of Sale.

Barrowclough D., 166, Egerton Street, Oldham, waste dealer	£28 0 5 &c.
Moore A., Chorlton-cum-Hardy, silk manufacturer, settlement in trust for wife.	
Sharpley G., Derby Street Mills, Macclesfield, silk manufacturer	£426 2 3 &c.
Beaulieu Joseph, dyer, &c. (Mortgage of the South of England Dye Works, Hastings.)	£1980 0 0
Good F. W., Weekday Cross, Nottingham, lace manufacturer	£50 0 0
Turner A., Riverside Cottage, Elland, Halifax, cloth fuller	£500 0 0
Holden R., Forest Street, Burnley, cotton manufacturer	£80 0 0
Horsfall Luke, 8, Byrom Street, Todmorden, cotton manufacturer	£70 0 0
Cottrell Mary, 63, Ardwick Green, Manchester, skirt manufacturer	£110 0 0 &c.
Cragg R., 4, Duncan Terrace, Islington, manufacturer of ladies' outfitting	£67 4 0 &c.
Schofield B, 86, Copster Hill Road, Oldham, cotton dealer	£25 0 0
Sleeman M., Cheetham, Manchester, tailor	£30 0 0
Crampton J., New Wortley, Leeds, cotton waste dealer	£20 0 0 &c.
Rudyard W. H. Glegg Street, Macclesfield, trimming manufacturer	£140 0 0 &c.
Iverson Henry, Potovens, Wakefield, worsted and yarn dealer	£8 15 0 &c.
Davies W., Edwards, M. } Plaskynaston Stores, Ruabon, and Cefn Maur, Denbigh, drapers, &c.	£1722 0 0 indy
De Laperrelle William, Camberwell, furniture dealer and agent	£22 12 2
Eddleston F. Renaubert L. F. } Mapperley, Nottingham, lacemakers	£13 0 0 &c.
Rutter H., 13, Norman Row, North Bow, trimming manufacturer	£95 0 0 ab.s
Gill T., Victoria Road, Dewsbury, clothfinishers	£10 5 0 &c.
Harwood G. W., Darwen, clerk and cotton waste dealer	£15 0 0 &c.
Davies Elizabeth, Tony Pandy, Glam., Welsh flannel manufacturer; Lewis Mary, Tony Pandy, Glam., Welsh flannel manufacturer	£46 0 0

PATENTS.

Specially compiled for "The Journal of Fabrics" by G. G. M. Hardingham, C.E., Fellow of the Institute of Patent Agents, 191, Fleet Street, London, E.C.

Applications for Letters Patent.

		No.
Bobbin frames for looms. H. H. Lake (R. S. Cookson, Philadelphia, U.S.A.)	31st July	3634
Combing machinery. J. Green and J. Fletcher, Oldham	11th Aug.	3833

Dyeing, sizing, and wringing hanks. G. Heywood and S Spencer, Radcliffe Bridge 5th Aug. 3746
Dyeing and treating textile fabrics. W. M. Riddell, Finsbury Pavement 11th Aug. 3830
Embroidery apparatus for sewing machines. W. R. Lake (F. H. Chilton, New York, U.S.A.) 1st Aug. 3657
Fabrics woven, &c., painting, printing, or dyeing. D. Guille (Pere), South Molton Street 5th Aug. 3744
Fabric for wall hangings, &c. A. M. Clark (A. Hutchinson, Paris) 5th Aug. 3749
Knives for cutting fabrics. T. Clark (J. A. Kay and D. Beath, Melbourne) 10th Aug. 3823
Knitting machines. A. M. Clark (J. W. Lamb, Parshallville, Michigan, U.S.A.) 10th Aug. 3826
Looms. J. Hopkinson, Birstal, near Leeds 31st July 3615
Looms. H. J. Haddan (L J. Knowlds, Mass., U.S.A.) 31st July 3627
Looms. H. J. Haddan (L J. Knowles, Mass , U.S A.) 31st July 3628
Looms. H. J. Haddan (L. J. Knowles, Mass,, U.S.A) 31st July 3629
Looms. J. Whittaker, Padiham, and R. Claydon, Rishton 2nd Aug. 3669
Looms for figured cloth. J. Kirkham and R. Entwhistle, Bolton 2nd Aug. 3672
Looms and Dobbies. J. Shorrock, Darwen 10th Aug. 3810
Lubricating spinning and preparing machinery. B. A. Dobson, Bolton 2nd Aug. 3668
Mules for spinning fibres. J. E. Heppenstall, Milnsbridge 5th Aug. 3748
Preparing Cotton and other fibre. W. Lord, Todmorden 23rd Aug. 4041
Spinning machinery. J. Holmes, Allerton 28th July 3580
Silk waste preparing and dressing. S. C. Lister, Manningham 4th Aug. 3715
Sulphites and bisulphites for bleaching. J. Imray (F. C. Kudelski, La Vendee, France) 8th Aug. 3773
Spinning, twisting, &c., worsted. H. Illingworth, Bradford 24th Aug. 4056
Smoothing fabrics, &c. J. Cavargna, Manchester 24th Aug. 4063
Textile fibres cleaning from straw, &c. C. Imray (Sociète Harmel, Freres, Val des Bois, France) 29th Aug. 3602
Textile fibres, treatment of with aniline when dyed black or grey. W. J. S. Grawitz, Fontenay, Sous-Bois, France 31st Aug. 3626
Treatment of cotton and other fibres. Ede Pass (H. Anthoni, Paris) 14th Aug. 3875
Wool cleaning process and apparatus. W. P. Thompson (A Fraysse, Antwerp) 2nd Aug. 3675
Wool cleaning process and apparatus. H. J. Haddan (C. Fernan and Co., Bruges, Belgium) 4th Aug. 3708

Grants of Provisional Protection for Six Months.

2220	3262	3288	3337	3357	3362	3379	3381
3408	3411	3493	3494	3498	3501	3509	3535
3539	3542	3566	3615	3627	3629	3669	3675
3715			(all of 1882).				

Notices to Proceed.

(Notice of opposition to the Sealing of a Patent must be given within Twenty-one days of the Notice to Proceed being advertised in the Commissioners of Patents Journal.)

Bleaching. C. Toppam, Salem, Massachusetts, U.S.A. 15th Aug. 3904
Bobbins and Spools. J. Shipley. Yorkshire. 5th April 1646
Carding machinery. W. Cliffe, Ley Moor, Golcar, Yorks. 3rd April 1610
Combing machinery. F. Fairbank and J. Robertshaw, Allerton. 6th July 3202
Combs employed in twist lace machines. W. Spowage, Nottingham. 15th July 3362
Cleaning wool, &c. E, Mansfield, Finsbury Park, London. 28th April 2021
Dressing silk and other fabrics. A. M. Clark (Vicomte de Gomberd, Paris). 9th May 2183
Looms. J. C. Rouse, Halifax. 29th March 1520
Looms. R. Hindle and G. Greenwood, Blackburn. 29th March 1523
Looms. R. J. Gülcher. Notting Hill. 18th July 3411
Looms. J. Wade, Wortley, near Leeds. 31st March 1566
Looms. W. McNichol, Batley, and J. Hollingworth, Dobcross. 17th April 1829
Looms. J. Hamilton, Strathaven, Lanark. 29th April 2038
Looms. H J. Haddon (L. J. Knowles, Mass., U.S.A.) 31st July 3627
Looms. H. J. Haddon (L. J. Knowles, Mass., U.S.A.) 31st July 3629
Looms. E. Hollingworth, Dobcross. 24th Dec. 5658
Moleskin cloth manufacturing and finishing. H.W. King and H. King, Hebden Bridge, Yorkshire. 27th April 1996
Mules for spinning fibres. J. S. Cooke and A. Hardwick, Liversedge. 22nd June 2963
Ornamenting ribbons, &c. A. H. Horsfall, Coventry. 11th May 2220
Repairing fabrics for bleaching and dyeing. S. Fulda, Bow, Middlesex. 15th April 1807
Rendering textile materials, wearing apparel, &c., inodorous, &c. G. Jaeger, Stuttgart. 5th May 2122
Setting and intensifying the colors of dyed or printed fabrics. C. Toppan, Salem, Massachusetts, U.S.A. 15th Aug. 3905
Spinning and doubling machinery. G. Ryder and M. Fielding, Bolton. 1st April 1598
Wool, &c. Washing machinery. J. Petrie, Junr., and F. J. Petrie, Rochdale. 30th June 3094
Warping and beaming machines. J. C. Sewell, E. Hulton and J. Bethel, Manchester. 12th April 1732

Patents Sealed.

549	572	699	734	745	782	785
807	812	826	841	881	884	908
932	936	998	1092	1262	1350	1816
2254	2290	2328 (all of 1882)				

Patents on which the Stamp Duty of £50 has been paid.

George Hawksley, 420, Caledonian Road, "Improvements in the manufacture of paper and ropes, yarns and other fabrics, made from vegetable fibre, and in obtaining fibre to be used for the purposes."—A communication. 14th Aug., 1879 3287
Charles Denton Abel, 28, Southampton Buildings, London, "Improvements in overhead sewing, and apparatus for that purpose."—A communication. 11th Aug., 1879 3226
Simon Willard Wardwell, Junr., of Providence, State of Rhode Island and United States of North America, "Improvements in sewing with waxed and dry threads, and in apparatus therefore, and in bearings and devices and attachments for sewing and other machines." 11th Aug., 1879 3229
William Sutcliffe, mill manager, and James Greenwood, manufacturer, both of Halifax, "Improvements in machinery for spinning and doubling fibres." 11th Aug., 1879 3212
Henry Lomax, of Darwen, "Improvements in looms for weaving." 13th Aug., 1879 3268
Dugald Scott, 12, York Street, Manchester, "Improvements in the manufacture of certain woven fabrics." 15th Aug., 1879 3300
Alexander Melville Clark, 53, Chancery Lane, "Improvements in the Heilmann combing machine." —A communication. 27th Oct., 1879 4375

Patents on which the Stamp Duty of £100 has been paid

John Overend Evans, Manchester, "Improvements in weaving and in apparatus employed therefor." 28th July, 1875 2674
John Bullough, machinist, and Joseph Smalley, commercial traveller, both of Accrington, "Improvements in stopping motions applicable to machinery for preparing cotton and yarn and other fibrous substances." 26th Aug., 1875 3002

Copyright of Designs.

(Registered during August, 1882.)

Class VI., Carpets.

384,456-58 Henry Jecks Dixon and Sons, Kidderminster.
384,839-42 Wells and Le Mottee, 57, Avenue Road, Camberwell, Surrey.
385,107 John Barry. Ostlere and Co. (Limited), Kirkcaldy.
385,185-84 H. R. Willis and Co., Kidderminster.

Class XI., Furnitures.

384,039-40 Salis, Schwabe and Co., 41, George Street, Manchester.
384,041-43 The Rossendale Printing Company, Manchester.
384,162 Boden, Terras, and Co., Manchester.
384,196-98 William Watson and Co., 60, George Street, Manchester.
384,212 B. Duckworth and Sons, 16, Turner Street, Manchester.
384,282 Salis, Schwabe and Co., 41, George Street, Manchester.
384,285 Swaisland's Printing Company (Limited), Crayford, Kent.
384,355 Seligmann and Haarbleicher, Manchester.
384,356-60 The Rossendale Printing Company, Manchester.
384,529-30 D. Lee and Co., Manchester.
384,743 S. and F. Sternberg, 44 George Street, Manchester.
384,869-71 D. Lee and Co., Fountain Street, Manchester.
385,095 Thomas Hoyle and Sons (Limited) Manchester.
385,096-97 R. Dalglish, Falconer and Co., Manchester and Glasgow.

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Contents.

	Page.
The Employers' Liability Act	37
Fixing Bronze and Brocades on Woven or Felted Fabrics	37
Late Fancies in Fabrics	38
Rhea and Ramie Fibre	38
Silk-Testing Machine	39
Patents for Inventions for 1881	39
Yellow Spots upon Sulphured White Blankets	39
London Arbitration on Bengal Cotton	40
Statistics of Silk Production in France	40
Looms for Weaving Two or more Pieces of Pile Fabrics Simultaneously	40
New Colouring Matters	41
The Royal Commission on Technical Education...	41
Artificial Indigo	41
Scientific and Art Notes	41
Original Designs	42
Monthly Trade Reports	42
The Bleaching of Jute	42
Original Designs for Worsted Coatings and Low Tweeds for Suitings	43
Odds and Ends	44
The use of Sulphate of Baryta in Finishing Tissues	44
Dyeing by Electrolysis	44
The Bradford Fine Art and Industrial Exhibition...	45
The Gazette :—	
Bankruptcies, Liquidations, &c. ...	47
Dissolutions of Partnership	47
Bills of Sale	47
Letters Patent :—	
Applications for Letters Patent, etc.	47
Copyright of Designs	48

Illustrations.

Birkett and Robinson's Steam Engine Lubricator.
Harrison's Patent Knitter.
Original Design for a Tapestry Fabric.
Original Design for a Satin Brocade.
Original Design for a Linen Table-Cover.
Original Design for a Border.

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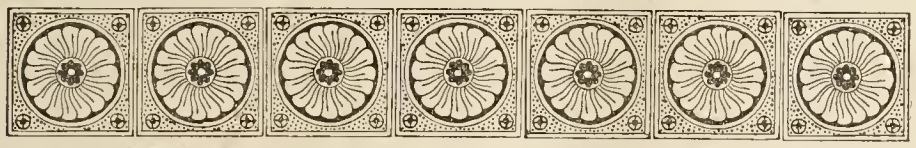
Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers in making enquiries of, or opening accounts with Advertisers in this paper, will kindly mention the *Journal of Fabrics* as the source from whence they obtained their information.



The Employers' Liability Act.

THE Fifteenth Annual Congress of Delegates of the Trade Associations of the United Kingdom was held during the week ending September 23rd. A number of subjects affecting the interests of employers and employed were discussed, one of the most important of which was the Employers' Liability Act. Mr. Murchie, of Manchester, moved "That, in the opinion of this Congress, the Employers' Liability Act has been greatly marred in its beneficial operation by its permissive character, and that it be an instruction to the Parliamentary Committee to use their best endeavours to secure an amendment that will make it illegal for either employer or workman to contract themselves out of its provisions. This Congress also urges every assistance being given to Messrs. T. Burt, M.P., and H. Broadhurst, M.P., in their endeavour to pass the Bill to amend the Act of 1880." He said they could not forsee when the Act was passed that it was not compulsory in its operation, but in a manner permissive. In the trade with which he was identified, they had had great difficulty in supporting their members in resisting the many attempts on the part of employers who frequently insisted on their employés contracting themselves out of the terms of the Act, and it was their duty to make it illegal for either a workman or employer to contract himself out of the Act.—Mr. Evans (London) reviewed the Act, and said that it had now been in operation a sufficient time for them to determine where it was found wanting in justice to the employer and the employed. After giving an account of the numerous cases which the Society, with which he was connected, had had under hand, he stated that they found the Act was defective in many respects:—first in reference to the notice which workmen were compelled to give within six weeks or forfeit their right under the Act. All the defects should be strictly inquired into in a Parliamentary Committee, and protection given to all classes of workmen.—After a lengthy discussion, Mr. Green (Manchester) suggested an addition to the resolution recommending all the Trades Unions represented at the Congress to seek co-operation of their representatives in Parliament on the subject.—Mr. Battersby (Glasgow) moved the following amendment:—"That in the opinion of this Congress the Employers' Liability Act has been greatly marred in its beneficial operation by its permissive character, and that it be an instruction to the Parliamentary Committee to use their endeavours to secure amendations that will make it illegal for either employers or workmen to contract themselves out of its provisions, stipulating a longer time—not less than thirteen weeks—during which notice of an action against an employer may be legally served, and taking steps to secure the abolition of the limit of compensation. This Congress also urges that every assistance should be given to Messrs. T. Burt, M.P., and H. Broadhurst, M.P., in their endeavours to pass the bill to amend the Act of 1880." He contended that the beneficial results of the Act had since its passing been almost as much as its most sanguine promoters dare hope for, though it was a matter for great regret that so many men had bartered away their rights.—After further discussion, Mr. Broadhurst, M.P., said that they must take care not to change their minds from month to month, or the impression would get abroad that they did not know what they really wanted. He did not bind himself to the bill as a whole. The bill of Mr Burt's was the Parliamentary Committee Bill, and it was only after considerable effort that the Committee succeeded in inducing Mr. Burt to take charge of it. With regard to the details of this bill, there was much in the original Act which he and Mr. Burt had objected to, and to which they should continue to object to. But they were taking accomplished facts, and were endeavouring to improve those facts as far as they thought they had any chance of doing so. With reference to the point of allowing workmen to contract out of the Act, he held that in admitting that to hold good, the Parliamentary Committee's Bill was proceeding on reasonable lines. The bill said that after the passing of this measure no further arrangement of this kind would be held good in law. With regard to the notice, he firmly believed that the objection raised by one speaker to the amendment of a hard-and-fast line was so fatal that it was hardly necessary to notice that part of the question. He thought there would be many cases occurring under this law where a six weeks hard-and-fast line would be fatal to the proper administration of the Act. After referring at some length to the practice of workmen bartering their right, a division was taken, and the resolution carried unanimously.

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Fixing Bronze and Brocades on Woven or Felted Fabrics

The fixing of bronze and brocades on to the surface of woven and felted fabrics in such a manner as to prevent the possibility of their removal in the wear and tear of ordinary use, was the object of a patent which received provisional protection only. The idea is undoubtedly good and one which we think might by a little perseverance on the part of some textile printer be considerably improved upon. In the process given, the bronze or brocade is made into a liquid or pasty consistency, a solution of india-rubber being added in order to give the bronze or brocade the necessary power to adhere to the material upon which it is to be fixed. The fabric, which is to receive the coating of the above liquid, is passed over a revolving roller, in contact with which is hinged an inclined plate forming a shaped trough into which the pasty compound is placed, so that as the fabric travels over the roller it receives a coating of the bronze or brocade. The thickness of the coating put upon the fabric is determined by the pressure of the inclined plate against the roller, which is regulated by adjustable weights or springs.

For the Exhibits of Messrs. J. & W. Birkby, Liversedge, at the Technical School, Bradford, see Stand No. 14, Gallery Annexe.

Late Fancies in Fabrics.

Broché woollens have the favourite ball spots of different sizes, varying from those as small as a silver five-cent piece to those two or three inches in diameter. These are monotone in some instances, while others are in contrasting colours of such dark shades as to be vague and undefined. Egg shapes, rings within rings, plums, and berries are also favourite designs. All the new and quaint colours come in these tasteful fabrics. Vermicelli patterns, wheels, stars, trefoils, circles within circles, and many designs that suggest braiding, have been woven in the wool goods.

Velours, épingeline, Irish poplin, ottomans, and all the various repped wool goods and mixtures of silk and wool so popular ten or twelve years ago, are again seen among the importations. These are greatly improved by being softer than they formerly were, and being also of softer tints. They may be found in plain colours or with satin balls or brocaded figures that look like needle-work

Cheviots have outline designs woven in the faded tapestry colours, and there are many mottled surfaces showing a perfect mélange of colours, while others have a distinct shade for the ground, and fine specks of a single contrasting colour strewn about in what is called "pepper-and-salt" pattern. The soutache designs are woven in others, and there are bold stripes like those of last season, with some large plaids of dull colours that appear to be bias across the breadth. The chenille-figure wool goods introduced last year are again imported; there are also many armures in gay colours for wrappers and for children's frocks, with the glossy satin *soleil* of last year, and camel's-hair of all colours and qualities; but Amazon cloths and cashmeres promise to retain the favour given them last winter, and become the standard woollen fabrics.

The richest new silks are called ottoman velours; these are more widely repped than the Victoria silks lately mentioned, and are ornamented with large detached figures of velvet or plush strewn about on a repped surface. In others this flower is wrought by machinery to give the effect of hand embroidery. There are also many revivals of matelassé silks, of the heavily repped gros d'Ecosse, soft Siciliennes, and the less distinctly repped *poult de soie*, formerly in great favour. The brocaded velvet with satin grounds are again shown, and there are brocades of great richness in new designs. The *lampas Egyptien* is an elegant brocaded fabric with lotus leaves incised on grounds of dull red or Nile green All these materials come in dark colours, while there are exquisite light shades of ottoman, lampus, Victoria, and other silks. Crevette, or shrimp-colour, faded-rose, Indienne blue, Nile green, and salmon shades are shown in the plain ottoman silks for parts of a dress, while the remainder is brocaded velvet of a single shade, or else brocaded satin of a velvet colour; thus there are salmon grounds with raised and shaded flowers of lilac, rose, and green that change like a chameleon, according to the light that falls upon them; on a pale hussar blue ground are terra-cotta *ciel* blue and cream-tinted figures. The shaded drops, balls, rings, and eggs described as on wool stuffs are all repeated in rich silks. Renaissance satins are shown with pale flowers on dark grounds, and there are delicate Watteau designs and colours for reception dresses—*Harper's Bazaar.*

Rhea and Ramie Fibre.

IN some of our former numbers the attention of our readers has been drawn to the great value—commercially speaking—of the Rhea fibre when used in the production of textile fabrics, and as inquiries have been made for further information, we have pleasure in reproducing portions of some notes on the fibre by Mr. P. L. Simmonds, which have appeared in "The Journal of the Society of Arts." The writer says that:—Rhea is the Assamese name; now, however, the fibre is more generally known and spoken of in Europe as the Ramie (the Malay name), though still in commercial circles here, and among brokers, passing under the singularly inappropriate name of "China grass." And here I cannot but agree in the remarks of my friend, Baron Sir Ferdinand Von Mueller, the eminent botanist, of Victoria, that we may hope to see the highly unsuitable names of gum trees, she oaks, native cherry trees, rib grass, New Zealand flax, rice-paper plant, and other ridiculous names, discarded in favour of the unmistakable and logically-correct applications which science has for all of these, and which are easily enough retained in the memory. The London brokers have, indeed, lately converted New Zealand flax into New Zealand hemp.

It may be useful to some to give a *résumé* of what has been done in the matter of rhea fibre, its cultivation and preparation for the market, in the last ten years.

The present imports of this fibre, chiefly from Shanghai and Canton, are only about 100 to 150 tons per annum; the price has ranged from £26 to £120 per ton, but £50 or £60 may be considered the medium. The cost of freight is now £8 to £10. It is difficult to arrive at the total quantity produced in China, for it passes under the general name of hemp, and appears to be grown in Formosa, and the provinces of Kwangtung, Honan, Chehkiang, Hupet, and Manchouria. It seems to range in price there according to quality, from 8 dollars the coarse for—sail-cloth and cordage, to 22 dollars the fine—for grass-cloth, per picul of 133 lbs.

The fibre produced from plants grown in Europe, Egypt, Algeria, and America cannot compare with that from Northern China, being weaker and very deficient in general qualities.

In the Kawngtung, Kwangsi, and Kiangsi provinces are found the principal seats of the grass cloth manufacture, with Canton, Swatow, and Kiukiang as ports of shipment. There are many varieties and qualities, costing from 8 cents to 1¼ dollars per yard. The coarser kinds are exported in small quantities to Manilla and Singapore, where as in China proper, they are extensively used as materials for summer clothing. The finer qualities, embroidered with silk, are much prized by Europeans.

The fibre of *Cannabis sinensis* and *Dolichos bulbosus* is also used for some kinds of grass cloth.

They are all classed in Chinese under the generic term *Ma.* The Chinese fibre is well known to be lustrous, tough, and durable; it is suitable for being converted into fabrics which approach in strength those of flax, and in glossiness those of silk, as Oriental ingenuity has long since shown. With us it has sometimes been used to mix with silk fabrics, but dyes do not take well on the combined fibres. Throughout Japan and India it is very largely used for ropes and cordage, which are twice if not thrice as strong as those of hemp. The fibre bast consists of coarse outer layers and fine inner strata. If it could be obtained in quantity, and at a moderate price—say not exceeding £50 a ton—it could be extensively employed by our manufacturers. It is doubtful whether the rhea and ramie fibres of India are not really the produce of the allied species, *Boehmeria tenaccissima*, much coarser and stronger than the fine, lustrous, long-stapled fibre that is shipped from Northern China. In view of its fineness, strength, and beauty, ramie will yet command an exercise of European ingenuity, which will make its culture a profitable industry. France has been stimulating the cultivation of the plant in many quarters. The Society of Acclimatisation of Paris, at its recent annual meeting, awarded no less than five silver medals to the following cultivators:—Comte Abbadie de Barrau, in the department of Gers; M. de Latour, in the Gironde; M. Jules Bertin, Maison Lafitte, near Paris; M. Ch. Riviere, in the province of Alger; M. Joseph Tramier, in the department of Vaucluse.

From some experiments made in Java, upon stems grown in the botanical gardens of Buitenzong, it would seem that the wood forms about 70 per cent. of the weight of the stem and, perhaps, with the moisture 77 per cent. A chemical bath, of which the ingredients are not stated, deprived the filaments of the parenchyma and the mucilaginous matters, and cottonised them. The textile filaments yielded were under 2½ per cent., and of this, ·15 being epidermis, it results that the stems yielded only about 2 per cent. of fibre, which is much less than that obtained from flax and hemp, but sufficient yield to pay expenses. Three cuttings a year were obtained.

(*To be Continued.*)

Silk-Testing Machine.

Consul Peixotto, of Lyons, calls attention to a new silk-testing machine lately invented, called the "Serigraph Serrel," which has been for some little time in use both in France and Italy. The invention is said to be considered remarkable and ingenious by the silk experts of Lyons, as appears from a paper on the subject read before the Scientific Society of that town by M. Adrian Perret. The filature or reeling of silk comprises three operations, each requiring considerable skill and great care to produce good silk with the machinery at present in general use. In the final operation of reeling, the grège or raw silk is made, and this is the thread which is afterwards doubled and twisted to form the warps and woofs of silk goods, which, in the trade, are known as organzines and trams. The raw silk is an exceeding fine thread, though it is formed of from four to ten or more separate filaments, each derived from a separate cocoon. To reel the silk, the cocoons are placed in hot water, and the filaments, from several of them being united by being pressed together, adhere to one another because of a natural gum with which they are covered, and which is softened by the hot water. The thread resulting from the union of these filaments (which is the raw silk) is then wound on a reel, the cocoons each paying out the filament until exhausted. The reeler's business is to form this thread of raw silk, and keep it as regular as possible in size, by adding new cocoons to the running thread as required, and this is an exceedingly difficult operation, requiring very great care; only the best reelers occasionally succeed in making a perfectly even thread Up to the present time it has been extremely difficult to test the regularity of silk, and this has been one of the greatest and most universally felt wants in the trade. So difficult is it, that silk has been, and is yet, bought and sold very much according to the reputation of the establishment at which it has been reeled, it being impossible to judge accurately of the regularity of any silk until made up into goods, when the defects become apparent and mar the beauty of the fabric. Irregularities also cause breakages and consequent expense, waste, and knots, during the manufacture of the silk, and are therefore especially to be avoided An approximate method of testing, called "titrage," has been employed. This consists in winding off and weighing numerous samples of thread of an equal known length. The differences in weight give the irregularities of the average weight of each sample, but the method is extremely defective and labourious, its worse defect being that a sample of a given length may be regular and of the same size throughout, or, on the other hand, extremely irregular and uneven, without affecting the result, as the errors balance one another. The "titrage," therefore, is of very little value as a test of the regularity, and is rather employed as a means of judging of the average size The operation of the "Serigraph" is as follows:—

The silks to be tested are either wound upon a bobbin or placed, if in hanks, upon a swift, in such a manner that it can unwind freely, and pass continuously through the machine. The end of the skein, or of the silk on the bobbin, is then taken to the machine, passed several times round a small drum, covered with india-rubber, thence to an agate hook, which is mounted at the end of a pendulum, hanging vertically, at a distance of half-a-yard from the drum, thence round a second drum, which is mounted upon the same shaft, and turns with the first, and is like it, covered with india rubber. After making several turns round this second drum the end of the silk is attached to a reel, which receives it as it leaves the machine. An essential point in the machine is that the second drum is larger than the first. The thread being mounted as described, the drums are put in motion, and the test begins and is made as follows:—At any given yard in its length, the silk is first drawn in by the first drum, and is wound round it, and delivered by it towards the pendulum, with a speed exactly equal to that of the surface, and of the drum itself. As the silk leaves the first drum and passes the pendulum hook, it is drawn in by the second drum with a speed 3 per cent. greater than that with which it is delivered by the first drum. This happens because the second drum is larger than the first, and therefore being on the same shaft, its surface has a greater velocity. The effect of this arrangement is to stretch each yard of silk 3 per cent at the time it is passing the hook on the pendulum. Silk being an exceedingly strong and elastic thread, the force required to make this elongation is quite sufficient to pull aside a pendulum carrying a pencil point, and sufficiently heavy to cause the pencil to make a distinct and clear mark. All the pendulums on these machines are supplied with pencils, and there is an endless band or roll of paper which is fitted to run under the point of the pencil, and to advance while the machine is running with a speed equal to one five-thousandth that of the silk which is passing the first drum. The thread and paper being arranged as described, the machine is put in motion. There is at once produced a tention upon the thread between the two drums which draws the pendulum to one side, until by its weight it opposes a force equal to that required to stretch the silk. When this point has been reached, the pendulum remains stationary as long as there is no change in the silk passing the hook, and as the paper advances, a straight line is traced upon it by the pencil. But with the passage of the least irregularity in the silk, as either more or less force is required to balance the stretch, the pendulum and its pencil assume a new position, and the line upon the paper is changed. As it is impossible to produce a perfectly regular silk, the pendulum and the pencil are in constant motion, and the line produced upon the paper is more or less controlled and curved. The practical result is that all the defects and irregularities of the silk are shown upon the paper, exaggerated about one hundred and twenty thousand times, and drawn by the machine itself to a regular scale, so as to form a continuous diagram. The indications of the quality, and the workmanship of the thread, are perfectly distinguishable, and an exactitude is attained in this test which exceeds that in any other. About a foot in length of the diagram represents a mile of thread, and the speed of the machine is such that this mile of thread can be run through it, and all its irregularities exposed in ten minutes. Besides being fitted for showing irregularities, yard by yard, the "Serigraph" also measures the silk, and is arranged to stop automatically when a desired length has been wound off. It has also an automatic arrangement which causes it to stop instantly if the thread breaks.

Patents for Inventions for 1881.

The annual report of the Commissioners of Patents for the year 1881, has just been issued. It states that the number of applications for letters patent for the year was 5,751, being 231 more than for the preceding year, which exceeded considerably the number of any former year. The number of letters patent sealed was 3,948, of which 68 lapsed in consequence of the patentees having neglected to file final specifications in pursuance thereof, leaving 3,880 in force. Of this latter number, final specifications were filed in respect of 3,621; complete specifications being filed in respect of 259. Applicants failed to seal their patents in 1,798 cases; opposition was offered in four cases; and one application stands over through the decease of the applicant. A table is given, showing that about 65 per cent. of the applications for patents, from 1852 to 1881, became valid patents; that of the valid patents obtained upon the applications from 1852 to 1874, nearly 30 per cent. paid the third year's stamp duty of £50 and continued in force until the end of the seventh year; and that about 10½ per cent. paid the seventh year's stamp duty of £100, and consequently remained in force for the full term of fourteen years. The report gives the usual list of the Commissioners' publications, including the classified abridgments which are now to be published in volumes for decennial periods. The number of classes now published is 99, and it is stated that the classification will be completed in about 110. The index to the contents of the specifications filed previously to 1852, commenced in 1878, is not yet complete, but as additional clerks have been engaged to assist in the work, it may be assumed that it will be published before very long. The receipts from the sale of publications during the year 1881 amounted to £2,912. The stamp duties received amounted to £196,831. The profits realised by the office amounted to £163,441. The total amount earned by the office, since its establishment in 1852, is not stated as in most former reports, but it must now be more than £2,000,000 The Patent Museum at South Kensington has been visited during the year 1881 by 282,121 visitors. During the year 1881, 91 ornamental, and 137 useful designs were provisionally registered; and complete registration of 15,176 ornamental, and 128 useful designs was effected. There were also three designs registered for sculpture.

Yellow Spots upon Sulphured White Blankets.

Upon some blankets of a good sound wool which have been washed with white bar-soap, rinsed and filled with clorine, when they are placed on the frame, yellow spots make their appearance which are neither rust nor are they caused by teeth broken off the carding machine. These spots are caused by sulphuring the woollens in an air-tight sulphuring chamber, when a larger quantity of sulphurous acid is produced by the burning of sulphur, than can be absorbed by the water contained in the goods. The excess of acid which cannot escape causes those spots which are not easily removed. Their formation is obviated by placing into the sulphuring chamber vessels with cold water which seizes upon the excessive acid and can be used for bleaching wool or silk.—*D G.W.*

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London Arbitration on Bengal Cotton.

A short time ago the *Manchester Guardian* called attention to some remarks in the Bombay papers on alleged abuses in London classifications of Bengal cotton, which elicited a reply from a London correspondent who used the signature, "R J. R." Some additional correspondence on the subject has been published in the *Times of India* One Bombay correspondent writes:—

Mixtures are almost entirely confined to Bombay baled Surats. No Bengals are baled here, and the staple is too low-priced and poor generally to make the kind of mixing in question a profitable occupation. It is in mixing high-priced Oomras and Dholleras, which are 25 per cent. higher in price than Bengals, that money is made. The *Manchester Guardian* was, therefore, quite correct in its quotation of your article as regards Bengals. The "fact" given by "R. J. R." as "worth a hundred arguments" is not overwhelming to my view of the question. The Star of Italy went from Calcutta, where the Cotton Frauds Act was never in operation, and scarcely heard of, and to which place complaints of "swindling mixtures" do not and never have referred at all. The low quality of the cotton shipped is, therefore, a matter altogether apart from the question of "swindling mixtures." Now for the result of arbitration. I have before me the weekly cotton circular of the L. C. B. A., dated 18th August. Fine is quoted $5\frac{1}{8}$, good $4\frac{1}{2}$, good fair $4\frac{1}{8}$, and taking F.G.F. as midway between the two latter qualities, its price would be $4\frac{5}{16}$. Therefore $5\frac{1}{8}$d. less $\frac{3}{4}$d allowance, is $4\frac{3}{8}$d. value of the fine tendered. $4\frac{1}{2}$d. less $\frac{5}{16}$d. of the good makes 4d., the value of that quality tendered. F.G.F. passed the quotation being $4\frac{5}{16}$ or $\frac{3}{16}$ between its value and that of the fine tendered, whereas "R. J. R." says there was not more than $\frac{1}{16}$d. between the fine and the F.G.F. I submit that loose statements of this nature lessen the value of the evidence of the aged correspondent of the *Manchester Guardian*. Allow me, sir, to give a case or two:—(*a*) 100 bales G.F. Bengals shipped per Armenia to Liverpool was sampled and arbitrated at that place and $\frac{3}{32}$d. per lb. allowed to buyer. The samples were then sent on to London, where the L C. B. A. gave $\frac{3}{16}$d. or exactly double. (*b*) 100 bales Bengals were purchased by a shipper here, were arbitrated on as good and $\frac{1}{8}$d. allowance given to buyer by two experienced members of the Bombay Cotton Trade Association. The purchaser sold this same cotton as F. G. F. to a London firm, and shipped it, and the award of the L C. B. A. was $\frac{1}{4}$d. off F. G. F., or taking good as worth $4\frac{1}{2}$d. and F. G. F. $4\frac{5}{16}$d., the award of the L. C. B. A. implies that the arbitrators in Bombay don't know cotton to within $\frac{5}{16}$d. per lb.! And it must be remembered that the standards used were in this case those of the L. C. B. A. My figures may not represent the actual price of the cotton on the contract or delivery dates, but they are proportionately correct. The case given by "R. J. R." as worth a hundred arguments was, if it is correctly stated by him, and if the shipper was fairly treated, which I take leave to doubt, a very exceptional case indeed, and in my humble opinion absolutely worthless, as supporting any point of his argument about the "letting of the cat out of the bag." I am fairly well posted in the market news of Bengals here, and have not heard once of so heavy an allowance as $\frac{3}{4}$d. being given on Bengals shipped from Bombay even when arbitrated on by the L. C. B. A That body may be interested to know that the receipts in Bombay of Bengal cotton have been—

	Bales.
Year ending 30th June, 1880.....	6,000
Year ending 30th June, 1881.....	55,000
Year ending 30th June, 1882.....	120,000

Calcutta has been very much in the hands of the L. C. B A., but it would be interesting to know how many bales of Bengals will go to Calcutta for shipment; and, considering the large proportion shipped direct to the Continent and to Liverpool from Bombay this year, how many bales will be sold for shipment to, and delivered in London in, say, the year 1885. Speaking of Oldham spinners, I may mention that one firm in Bombay, who did not sell a bale of Bengals to Oldham two years ago sold over 4,000 to that place alone through Liverpool this year, and being fairly treated paid hardly any allowances at all. In conclusion, I hope "R. J. R." will not think me "coarse" if I insist again on my opinion that the L. B. C. A. must mend their ways if they wish to keep their hold on the market for Bengals.

Another correspondent, "A. B.," writes:—

Your correspondent "Bengals" is a little out about the London standards of Bengals here. They were made up from Association standards by our London friends, the Association having refused us standards. Let us hope the Association will send standards this year for their own sakes. The guarantee by dealers is very objectionable in many ways to shippers; and as the dealers live up-country when disputes arise discovery is difficult. No seller's guarantee would be required if we could get standards from the London and Liverpool Associations, and have some assurance that the results of surveys would be less uncertain, especially in London, than they have been of late years. The examples given by "Bengals" might be multiplied indefinitely.

Statistics of Silk Production in France.

The production of silk in France dates from the commencement of the seventeenth century, but it is only from the middle of the eighteenth century that sufficient information is obtainable to estimate its real importance. From 1760 to 1780, the annual average crop of cocoons amounted to 14,520,000 lbs., representing a value of £660,000. After the revolution of 1789, the production was neglected, on account of the introduction of cotton, at the expense of silk goods. It was not until 1820 to 1830 that a serious revival took place, bringing the annual production up to 23,760,000 lbs., representing a value of £1,770,400. From 1830, the production was very rapidly developed; it attained, from 1841 to 1845, an annual average of 38,500,000 lbs., yielding a total revenue of £2,660,000 yearly. The greatest production, however, was in 1853, in which year it rose to 57,200,000 lbs., valued at £4,680,000. After 1865, the disease of the silkworm, which had already existed for some time, reduced the crop of cocoons to 16,500,000 lbs., but the price at that critical moment being about 3s. a pound, the revenue obtained amounted to £2,475,000. During the past fifteen years, the crop has experienced enormous fluctuations, from 36,160,000 lbs. in 1866, it fell to 17,768,000 lbs. in 1869; in 1870 and 1871 it rose again to 22,000,000 lbs. During the three following years it fell from 19,800,000 lbs, to 17,600,000 lbs; and in 1875 attained 24,000,000 lbs In 1876 it fell to 5,280,000 lbs; and in 1877, the amount exceeded 26,400,000 lbs. Finally, the production, in 1878, amounted to 17,600,000 lbs.; in 1879, to 11,000,000 lbs.; and, in 1880, to 14,300,000 lbs.

Looms for Weaving Two or more Pieces of Pile Fabrics Simultaneously.

In the weaving of pile fabrics of various kinds by power looms great improvements have been made recently. One of the latest inventions relates to the weaving of two or more pieces of such fabrics at one operation, one or more shuttles being thrown simultaneously, the pieces being connected together by means of the pile threads, the severing of which produces two or more distinct pieces of fabric. By this improvement in looms a considerable saving, in the long run, is effected in the cost of producing the fabric.

In the weaving of figured piles the jacquard machine is employed for producing the figures by means of the pile warp, each thread of which is put upon a separate bobbin, which is fixed in a creel placed behind the loom, the figure being produced by the jacquard acting on each thread of the pile warp, the ground being made by a set of tappets which also regulates the length of the pile. The ground may be twilled or otherwise. The above-named tappets are used in order to keep the two pieces open sufficiently to take up the length of pile required, being so arranged that whilst weaving the upper piece, the healds belonging to the lower one are kept at rest at the bottom, and when weaving the lower piece, those healds belonging to the upper one remain at rest, thus causing the two pieces to separate, and by so doing taking up the length of pile given. At the back of the loom two rollers are placed, one for each ground warp, to open the warps to a certain angle in combination with the healds. The healds belonging to the upper piece are kept at a higher level than those belonging to the lower piece. These two levels, and the angles given by the above rollers, cause the pile to keep tight between the two pieces. In front of the reed, in the shuttle race of the going part, a swing rail is attached, which is carried by two pivots close up to the reed, the front part being held up to its place by means of spiral springs for the shuttles to traverse over it; the object of this is to cause the front of the swing rail to depress as soon as it comes in contact with the pile guage (which is placed at the edge of the cloth in front of the reed) and to rise again to its proper level as the going part recedes after beating up, and thereby keeping clear of the pile guage each time the going part beats up. To make Utrecht plush in looms weaving two pieces face to face three combinations of tappets are used; each combination makes the weft to form the loop for the temples, and also fastens all the selvages of the two pieces.

The Lancashire and Yorkshire Railway Company have, through their Telegraph Superintendent and Engineer, received specifications and estimate for new lightning conductors for their carriage works at Newton Heath, and decided to use the system for which Messrs. James Davis & Co., of Bradford, received the prize medal at the Crystal Palace International Electric Exhibition, 1882.

New Colouring Matters.

Warp and Weft, speaking on new colouring matters, says: C. Rudolph noticed, towards the end of the past year, that acetanilid, by the action of zinc chloride, at a temperature of 250° to 270° centigrade, is converted into a beautiful yellow colouring matter. In connection with O. Fisher he has investigated the reaction, and arrived at the following results:—

The colouring matter, for which they propose the name, "Flavanilin," is particularly remarkable on account of its moss-green fluorescence, which appears especially brilliant on silk fibre. It is prepared by heating acetanilid with zinc chloride for several hours to 250° to 270° Centigrade, boiling the fused mass with hydrochloric acid, and precipitating the colouring matter from this solution by salting, adding at the same time a small quantity of sodium acetate. It is purified by redissolving.

Flavanilin.—The colouring matter is the mono-acid salt of a strong base, which, on the addition of the ammonia or an alkali, is separated from the dilute aqueous solution, as a milkly precipitate. After a short time long colourless needles are formed in the liquid, which are very difficultly soluble in water, but dissolve readily in alcohol. When crystallized from benzol the base forms needles one inch in length. For analysis a product was used which had been several times re-crystallized from methylic alcohol. The results obtained give for the formula $C_{16} H_{14} N_2$. Flavanilin is therefore free from oxygen, and its formation from acetanilid may be expressed by the following equation: $2\ C_8 H_9 NO = C_{16} H_{14} N_2 \times H_2O$

When exposed to the air it is rapidly turned yellow. Its melting point was observed at 97°. At a high temperature the base is volatile, without decomposition. It is very permanent toward reducing agents, like tin or zinc, in acid solution. If reduced with tin and hydrochloric acid on the water bath, the addition of sodium chloride and some sodium acetate again separates the the yellow chloride.

Dichloride.—The base dissolves with a yellow colour in dilute hydrochloric acid; if this solution, not too dilute, be poured into concentrated hydrochloric acid, colourless needles or warty concretions of the dichloride separate after some time. This salt is very difficultly soluble in concentrated hydrochloric acid, but dissolves very readily in water, when dissociation takes place with the formation of the yellow salt. If to a solution of this salt some sodium acetate and common salt be added, the mono-acid salt separates after some time in beautiful yellowish red prisms, which show on their surface a brilliant bluish-red lustre. The salt is readily soluble in water.

Ethylflavanilin.—In order to obtain this compound an alcoholic solution of flavanilin was heated to 110° with ethyliodide under pressure. Red needles were obtained, which, recrystallized from very dilute hydriodic acid, formed ruby-red needles. The crystals are the iodide of mono-ethylflavanilin. On addition of ammonia to the aqueous solution of the salt, the ethylflavanilin separates as a colourless resinous mass. The base has not yet been further examined. The colour of its salts is more red than those of flavanilin, and they dye silk orange.

Flavanilin, when heated with an excess of anilin and some benzoic acid to 170°, gives phenylflavanilin, all the salts of which are yellow.

The Royal Commission on Technical Education.

After visiting many parts of Southern Germany, the members of the Royal Commission on Technical Instruction have again returned to England. Beginning with the Black Forest, Messrs. Woodhall and Redgrave gave minute attention to the clockmaking, wood carving, straw plaiting, and pottery manufacture, which find employment for so large a proportion of the population, and which seem to supplement the agricultural pursuits of nearly all. Interesting reports may be in due course looked for with regard to the efforts which have been made by the Government and the Committees to improve these manufactures by schools which have been established for the teaching of technical methods, and for increasing the artistic skill of those employed, or destined for employment, in these and kindred occupations. Proceeding by Reutlinger, and visiting the great weaving and needlework schools, which have been the pioneers of many similar institutions, the Commissioners reached Stuttgart, where, under the courteous guidance of Herr von Diefenbach, they inspected the Polytechnic, the Builders' School, and the Trade Museum, and obtained much additional information respecting the technical school system for which the kingdom of Wurtemburg has long been famous. At Nuremberg and Carlsruhe something was seen of the trade done in Bavarian toys. Thence passing into the Thuringian forest country the Commissioners visited Sonneberg, and some of the numerous villages in which every cottage is the hive where is produced some work and ingenious device. These toys and trinkets, as well as the many wares of more substantial character, are largely exported, and call into exercise an amount of invention, enterprise, and industry which is eminently creditable to the people, and which brings to the country a prosperity, the evidence of which appears on every hand. The report of the Commission we are sure will be eagerly looked for during the next session of Parliament by all those interested in Technical Education, although we believe the inquiry is not yet completed.

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Artificial Indigo.

The *Pharmaceutische Zeitung* states that Professor Baeyer is continually improving his methods of preparing indigo artificially, and the newest discoveries in this direction which have been patented by the Baden Aniline and Soda Works are as follows:—

Preparation of Indogenic Acid Ether.

1. The ethyl ether of orthonitrophenylpropiolic acid is converted by reduction with ammonium sulphydrate into the ether of the so-called indogenic acid, which crystallizes in colourless prisms and melts at 120° C.

2. Orthonitrophenylpropiolic acid is converted by sulphuric acid at the ordinary temperature into isatogenic acid ether, which is isomeric with indogenic acid ether—a substance crystallizing in yellow needles and melting at 115° C. This is converted by means of certain acid-reducing agents into indogenic acid ether

Conversion of Indogenic Acid Ether into Indogenic Acid and Indogen, and the formation of Indigo Blue.

Indogenic acid ether, when saponified with alkalies, yields indogenic acid, melting at 122° C. This, when heated, gives off carbonic acid, and passes over into indogen.

$$C_8H_6NOCO_2H = C_8H7NO + CO_2$$

Indogenic acid and indogen, treated with dilute acids or alkalies, or oxidized by the air or otherwise, yield indigo blue.

SCIENTIFIC AND ART NOTES.

An exhibition of lace, old and modern, hand and machine made, and of fans was opened at Brighton, in the Aquarium buildings, on October 7th.

* * * *

The directors of the Paris International Exhibition of Contemporary Art have invited Sir Frederick Leighton and Mr. Burne Jones to contribute as representatives of English art to their exhibition of 1883.

* * * *

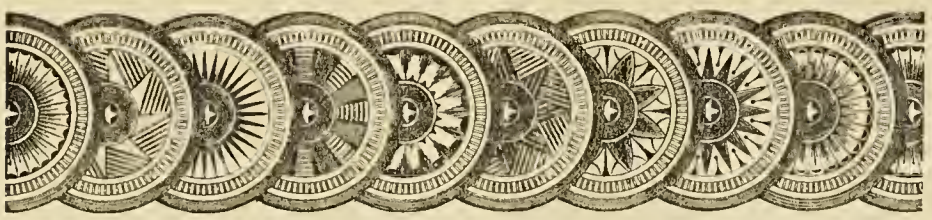
The National Gallery is getting over-full, and a suggestion has been made that a building should be erected on the Thames embankment, further east, and amongst business men, for a second gallery.

* * * *

Mr. Werdermann, whose electrical discoveries have attracted much notice, has just patented a new incandescent lamp. The peculiarity of this lamp consists in the fact that the vacuum, indispensable in all other such lamps, is dispensed with. Mr. Werdermann employs silicium in place of carbon, and he has succeeded in procuring from it better results than if carbon were employed.

* * * *

The time for making entries to the Electric Exhibition, to be held at the Westminster Aquarium during the winter, expired on the 14th September. The aggregate value of the prizes will be £1,000, and they will be awarded in several branches; *e.g.* for best system of storage and generator; for best system of street mains or leads; for best sets of fittings for use in different parts of houses; for best electric meter, &c., including a prize for the most complete apparatus for remedial appliances, especially "electric baths."



ORIGINAL DESIGNS.

The first plate represents a design for a Tapestry Fabric, which, it will be noticed, is of a panelled formation, and of such a description as to adapt itself suitably to either a dado or body pattern. It may be produced in four or five colours; the one used for the flowers should be shuttled. This pattern is drawn by Mr. R. T. Lord, Gerrard Street Halifax.

* * * *

Mr. W. R. Foster, Shandon Place, North Mercliston, Edinboro', has furnished us with the rough sketch which forms the subject of our second plate. This design, which is drawn from the Honeysuckle, is intended for Satin Brocade, but might be advantageously used for many other purposes.

* * * *

The third plate consists of two designs by Mr. Ezra Hoyle, Mount House, Great Malvern. The first of these will be found serviceable for low quality of Linen Table-covers. The second is an idea for a Border, which may be useful to manufacturers of fabrics generally.

* * * *

*** We beg to inform manufacturers and others that adaptations of designs, published in the "Journal of Fabrics," can be made at the Office by experienced Designers, and that Original Designs can also be furnished at moderate charges.

* * * *

Numerous inquiries having been made for back numbers of the Journal, we beg to inform our readers that all the numbers from the commencement to July are out of print. We have however reprinted our designs and have a stock of copies on hand, which we shall be happy to supply in the order in which they were originally published, at 6d. per set, each set representing one month's issue.

MONTHLY TRADE REPORTS.

Wool.—At the London sales which closed on the 2nd instant, the active spirit, which characterised them in our last report, has been well maintained. The level of prices paid last sales has been fairly maintained. The better classes of fleece wools were in active demand during the whole sales, while inferior sorts have had a dragging sale. The attendance of buyers was rather below the average, In the provinces the markets have varied somewhat, at Leicester wool has been in fair demand at firm rates, with a tendency to rise. In Bradford, at the commencement of the month, business was of a dragging nature, but as the month advanced it improved slightly, and closed with an average demand, with very firm prices. In the Yarn and Piece trade, both for home and export account, only a small business has been transacted in Bradford and Halifax, but prospects of an improvement are favourably spoken of. In the finer counts of Botany a little more has been done. In the hosiery trade a brisk business has been done, at slightly increased prices.

Cotton.—The trade in the raw material has been on the whole quiet. At the beginning of the month very little change occurred in prices, but on receipt of the fall of Arabi and the entire collapse of his campaign, Cotton declined from 1d. to 2d. per lb. for Egyptain, the fall in other sorts being to a certain extent also affected. In the manufactured goods the production still exceeds the demand, which continues very slow both for home and foreign account. More enquiries have been made for the Eastern markets, but yet without much actual business being transacted. Yarns have partaken of the fall in Cotton, perhaps not to the same extent, but being in abundant supply it is with difficulty that business is done, without submitting to continual reductions.

Woollen.—The activity reported during the past three months still continues. In the better class of worsted coatings and also in cheap tweeds, the demand has increased, in the fancy trade a fair business has been done. The favourable weather during the month has greatly influenced the home trade; the demand in retail establishments having given an impetus to the wholesale houses and consequently to the manufacturers The shipping firms have been well employed on all classes adapted for export. Prices for all sorts are firmly maintained. Manufacturers are most sanguine of good business during the next few months.

Linen.—Business has been of a fairly satisfactory nature. In the Scotch districts, the export demand has been good, and the home trade has exhibited signs of improvement and prices have been well maintained. In the Yorkshire districts, trade is not perhaps, so satisfactory, but on the whole has been fair. Still the output goes on as usual and goods of almost all descriptions move off fairly. In flax and tow numerous transactions have taken place with prices slightly against buyers. The jute trade has been quiet with no change in prices. A healthy tone pervades the market in most branches.

Carpets.—The trade has been of a dragging character. Many manufacturers are running their mills short time, which of course has the tendency to prevent the accumulation of stocks, but the curtailment of production does not make the trade remunerative, although a stiffening tendency in the wool and worsted market has been observable. The tapestry branch of the trade is extremely quiet. Manufacturers hope for a better state of things during autumn.

Lace.—There has been a want of animation in the trade during the month. A few manufacturers are fairly employed, but this is not the rule. The curtain trade is quiet, the time being taken up in their manufacture for the ensuing season. The commoner kinds of laces are in fair requests but good qualities are almost unsaleable. Prices on the whole keep firm and a hopeful feeling prevails in the market.

The Bleaching of Jute.

Some interesting details of his own experience in the bleaching of jute has lately been published in the *Moniteur des Lils et Tissues*, by M. Albert Scheurer At one time chloride of lime was considered suitable for the bleaching of jute, but it was soon found that this reagent had a tendency to make the yarn hard an brittle, likewise removing along with it a portion of its solidity, that silky brightness which constitutes one of its principal merits. Hypochlorite of soda, on the contrary, by reason of the more rapid and uniform oxidation which takes place, can be employed at a high degree of concentration without the resistance of the fibre being impaired. Its action has, however, to be regulated with care on account of its powerful properties as a reagent. Bleached jute would suffer by being plunged into a concentrated solution of hypochlorite of soda, while such is not the case with jute in the unbleached state, in which the cellulose is protected in the earlier stages of the operation by the incrusting substance. It is the latter portion of the process (specially affecting the purification of the white) which is usually found to affect the solidity of the textile substance under treatment, even when the solution has not been a strong one. Therefore, M Scheurer considers that, to save the fibre from the corrosive action of the hypochlorite, it is necessary to diminish the force of the reagent, as the operations succeed each other, and to preserve a certain relation between the degree of concentration of the oxidising liquid, and the quantity of the incrusting substance which remains to be destroyed. In this way a satisfactory white is obtained, without prejudice to the textile substance operated upon. M. Scheurer's remarks are suggested by an interesting report made by M Witt to the Industrial Society of Mulhouse. This report deals with the invention of Mr. Cross, which has been adopted by the Barrow Flax and Jute Company, for the purpose of improving the bleaching of Jute, the merits of which, it will be noticed, are fully recognised in the remarks quoted.

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DESIGNED BY R. LORD.

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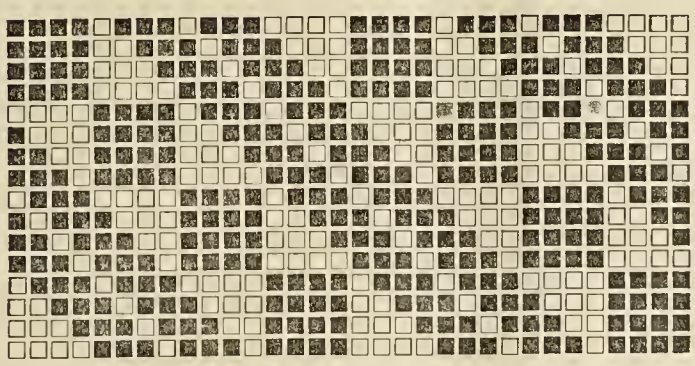
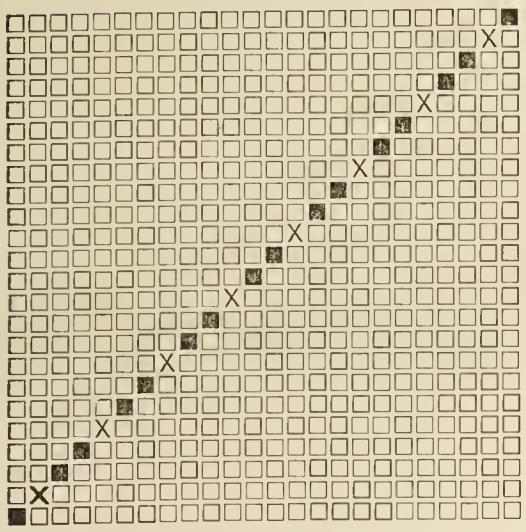
ORIGINAL DESIGNS

For Worsted Coatings.

No. 14.



Design.

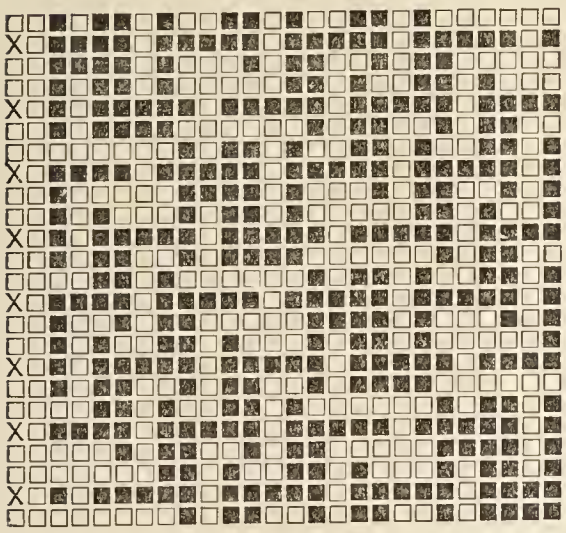


Draft.

Warp: 2 threads Black Worsted Face A; 1 thread Black Woollen Backing B.

3640 threads of Black Worsted 2 fold 13440 yards to be dressed on one beam; 1820 threads of Black Woollen single 4608 yards to be dressed on another beam; total threads in warp, 5460.

A ■ B X



Pegging Plan.

Draft: 1 thread A
1 ,, B
2 ,, A
1 ,, B
2 ,, A
1 ,, B
2 ,, A
1 ,, B
2 ,, A
1 ,, B
2 ,, A
1 ,, B
2 ,, A
1 ,, B
2 ,, A
1 ,, B
1 ,, A

24

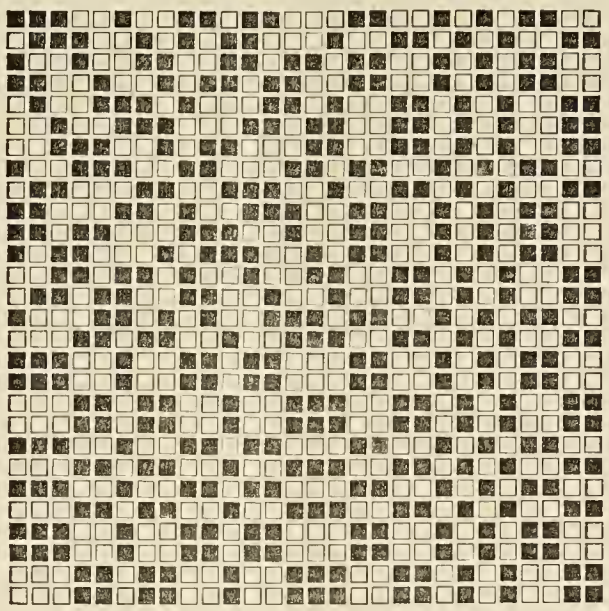
Weft: Black Worsted 2 fold 13440 yards face.
Black Woollen single 2560 ,, backing.
2 picks face.
1 ,, backing.

The backing pick must always be thrown in the shed marked X on Pegging Plan.

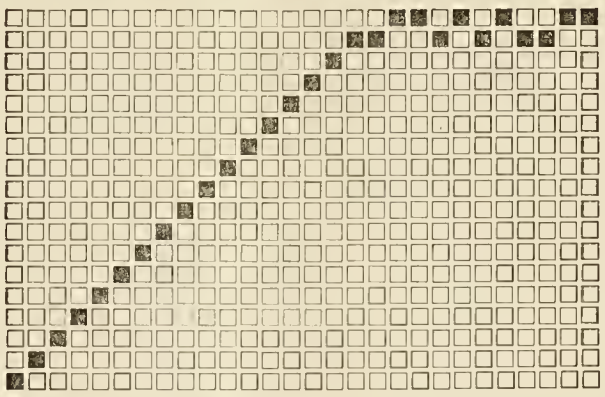
Use also Blue, Brown, Olive, Grey, and Green Worsted in dark shades for face weft.

Reed 14: 6 threads in a reed.
81 picks per inch.
65 inches wide in the loom.
56 ,, ,, clear finish.

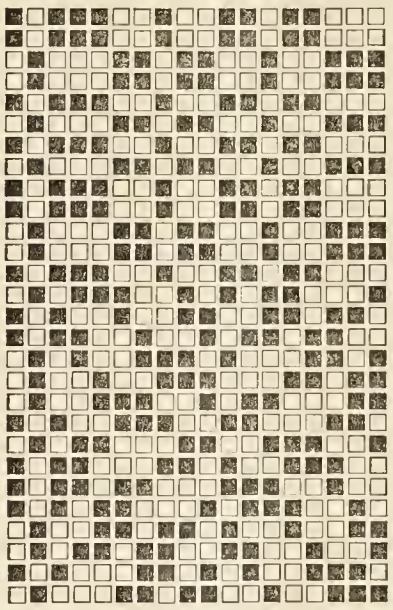
No. 15.



Design.



Draft.



Pegging Plan.

No. 15 is a design for a Check for a Worsted Coating, and is a 28 end Pattern drafted to weave with 18 shafts.

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Low Tweeds for Suitings.

No. 16.

Pegging Plan.

Draft.

Warp: 2 threads Lavender.
2 ,, Bronze.
2 ,, Mid. Blue.
2 ,, Black and Orange Twist.

8 ends in pattern.
Begin the Draft with 2 ends Lavender.

Warp Yarns: Lavender single 2560 yards.
Bronze ,, ,, ,,
Mid. Blue ,, ,, ,,

Twist { Black 5120 yds. / Orange 5120 yds. } 2560 yards Twisted 12 turns per inch.

Weft: Black, Dark Grey, Dark Brown, Slate, Dark Green, &c., in single yarn at 2560 yds.

Reed 11: 2 threads in a dent.
24 picks per inch.
66 inches wide in loom.
56 inches wide when finished.
Clear finish.

Pegging Plan.

No. 17.

Draft.

Warp: 2 threads Sage Single.
2 ,, Black and White Twist.
2 ,, Sage Single.
1 ,, Black and White Twist.
1 ,, Black and Crimson Twist.

8 ends in pattern. Begin the draft with 2 ends Sage.

Warp Yarns: Sage Single, 2560 yards.
Twist. { Black 5120 yards. White 5120 ,, } 2560 yards Twisted, 12 turns per inch.
Twist. { Black - 5120 yards. Crimson 5120 ,, } 2560 yards Twisted, 12 turns per inch.
Weft: Middle Grey. Olive. Brown and Drab, &c. in single yarns at 2560 yards.
Reed II: 2 threads in a dent.
24 Picks per inch.
66 inches wide in loom.
56 ,, ,, when finished.
Clear finish.

ODDS AND ENDS.

The Drapers' Company has offered £300 per annum for five years towards the establishment of a technical school in connection with University College, Nottingham, with a grant for the first year of £200 for purchasing apparatus, &c.

* * * *

The Board of Trade has received a copy of a decree issued by the French Government on the 11th instant, fixing at 17 per cent. the legal tare for boxes of thick boards of the kind now in use for packing cotton yarns and thread in bobbins or cops. In other cases boxes of cotton yarn will only be entitled to a tare of 12 per cent.

* * * *

To dye cotton with aniline black it is dipped in a bath consisting of a sufficiently concentrated solution of aniline salt and chlorate of potash, or any other chlorate. When it is sufficiently saturated it is taken out of the bath, squeezed, and taken into a well ventilated room to dry. When dry, the cotton is taken through a bath of bichrome of potash, or any other oxydizing agent, and then washed.

* * * *

Messrs. Fry and Co., of Fenchurch Street, have, for the present, abandoned the idea of holding a floating commercial exhibition to the principal ports of the world. It will be remembered that the promoters proposed to despatch a large steamer so arranged as to contain a number of sample rooms for the display of any variety of goods, with ample open space for showing large samples, and that the trip was to last twelve months.

* * * *

Considering the enormous number of people in the United Kingdom interested in patents, it is to be regretted that a more suitable home has not long ago been found for the valuable and interesting collection of models to be seen at the Patent Museum, which is at present located at South Kensington. The museum is open to the public free of charge every day but Sunday and patentees are allowed to exhibit models of their inventions. There is also a complete set of the Commissioners of Patents' publications open to inspection, and yet, in spite of these great facilities, the number of persons who visited the museum last year was less than 300,000, while the total number of visitors since it was opened in June, 1857, has not exceeded 5,500,000. It is understood that steps are being taken to erect more commodious premises for the museum, in order that its treasures may be much more extensively appreciated.

* * * *

It may not be amiss to call the attention of the British cotton and silk trades to the fact that the Chinese are making arrangements for the manufacture of both textiles on their own account. Under this head in the reports recently issued by the American Consuls—one of whom, Consul Stevens, states that a cotton factory of the most perfect construction, is shortly to be erected in Shanghai—Consul Bandinel writes from New Chiang to the effect that the local officials contemplate establishing a company in the very heart of the silk district, for the purpose of employing foreign machinery in the treatment of the raw article and in the production of silk piece goods. In view of this undertaking, the cottagers of the adjoining district have been ordered to acquaint themselves with the most improved methods for rearing the worms, killing the cocoons, and reeling off the silk. It need scarcely be observed that if the Chinese seriously set to work to provide themselves with their own cotton and silk piece goods an unmistakable blow will have been delivered at our Lancashire and Cheshire commercial centres.

The Use of Sulphate of Baryta in Finishing Tissues.

The use of sulphate of baryta in sizing and finishing warps and tissues has long been known. The old process consisted in adding to the employment of starch, or the solutions of all animal and vegetable sizes, the sulphate of baryta obtained separately. Under these conditions the shade of the sizing is yellow, which discolours considerably the white of the tissues.

The method patented by M. Chaudet is based on the mixture made up in proportions varying according to the strength and the density of the sizing to be obtained, of water, of starch or other sizing matter, either animal or vegetable, a drying oil (of ricinus, cotton, poppy, &c., extracted by the Chaudet process, previously patented), and sulphate of baryta in its natural state. The most suitable proportions are 400 kilos. (or litres) of water; 100 kilos. of starch; drying oil, 10 to 20 per cent. of the weight of the starch; chloride of barium, 10 to 20 per cent. of the starch; and ordinary sulphate of soda in a quantity chemically equivalent to operating the double decomposition of the chloride of barium. All these articles are mixed and boiled in a vessel at the same time by the aid of a jet of steam to form the completed preparation of size. In order to facilitate the use of the new method M. Chaudet mixes equal proportions of chloride of barium and sulphate of soda in a dry state; this powder can be easily used without fear of double decomposition.

Finally, the claim of the patent is upon the application of a double decomposition of all the alkaline sulphates soluble in water with the salts of barium, equally soluble, to work the sizing or finishing of fabrics, or of any other sizing materials the density or the whiteness of which can not be secured by other methods.—*From Moniteur des Fils et Tissus, translated for The Textile Record.*

Dyeing by Electrolysis.

At the recent Paris electrical exhibition a glass case full of beautiful aniline dyes, prepared by the action of the electric current on aniline salts, attracted considerable attention. It represented the products of a new industry, and the inventor of the process, M. Gœppelsrœder, of Mulhouse, was awarded a gold medal for his researches. This ingenious chemist has quite lately extended his experiments in the direction of dyeing, and he is now able to form and fix aniline dyes within the tissues of cloth or paper fabrics by the action of the electric current. These dyes can be formed of various tints, and according to any pattern. The cloth is placed between two metal plates, and steeped in a solution of the aniline salt to be decomposed. For a black colour he uses the chlohydrate. An electric current is sent through the cloth from one plate to the other by connecting the two plates to the two poles of a voltaic battery or a small dynamo-electric generator. One of the plates has the desired pattern or inscription cut in relief on its under side, that is to say, the side next the fabric, and the current decomposing the salt along the projecting lines of the engraved plate, leaves a black pattern of the design within the tissues of the cloth. The colours are fast and will not wash out. By a similar process colours already on the cloth can be effaced entirely or blanched in certain places according to a determined pattern. M. Gœppelsrœder is actively pursuing his experiments and may discover new results.

A fashionable colour in Paris this year, especially for feathers, is known as *Vieil Or (old gold colour)*. M. Julliard, in an article in the *Union Pharmaceutique*, states that this colour is obtained from a preparation known in the trade as mandarine, which is a preparation of turmeric, orseille, indigo carmine, and the aniline dye Orange II. The indigo carmine is used only in very small proportions to give the tarnished appearance, and the Orange II. is also used in quite small quantity to make the colour more permanent. Feathers to be dyed this colour are generally first treated with a solution of salt of sorrel, oxalic acid, or sulphuric acid.

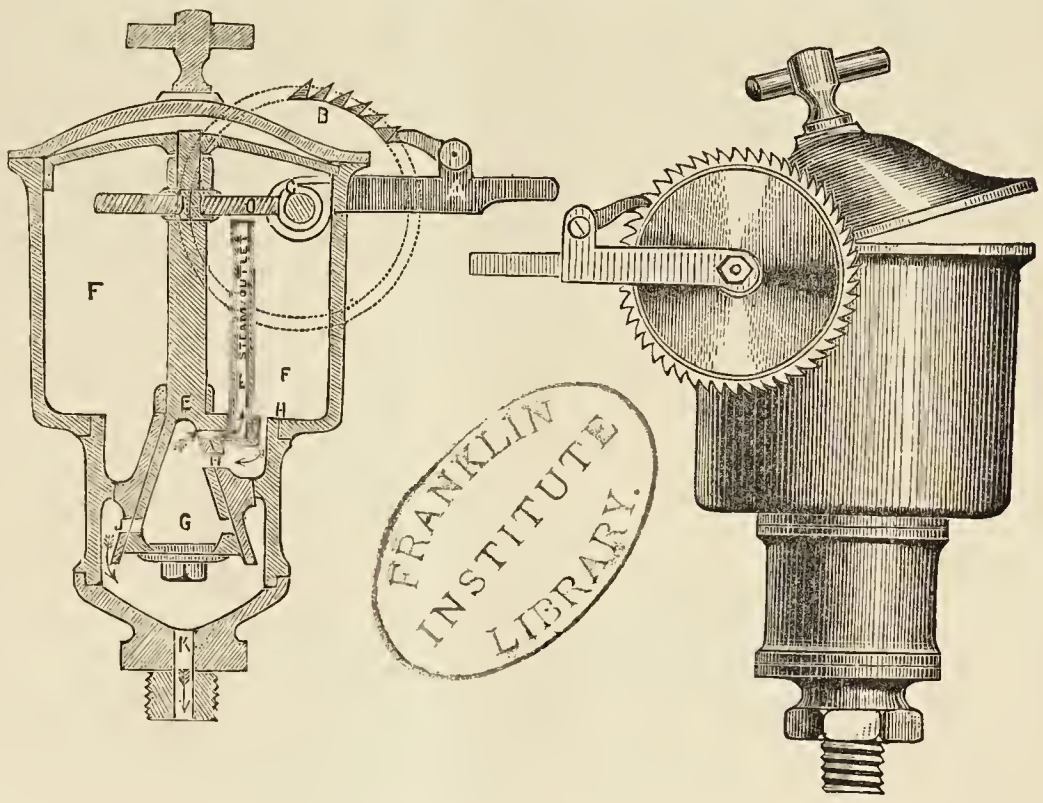
The Bradford Fine Art and Industrial Exhibition.

(THIRD NOTICE.)

MESSRS. DRONSFIELD BROS., MACHINISTS, ATLAS WORKS, PARK STREET, KING STREET, OLDHAM, have an admirably arranged exhibit of grinding rollers, a grinding frame, a card mounting frame, &c. Their patent grinding roller is covered with emery coated-filleting, which operation of covering is conducted by machinery that has been patented, in such a manner as to render the filleting uniform in thickness. The great advantage will be highly appreciated by users of the roller. The roller itself is made of metal tube, which in order to produce a perfectly true cylinder, is turned and afterwards ground. The filleting is wound upon this roller to form a true grinding surface, with less trouble than is required when re-covering a carding cylinder. The filleting is coated with emery finer than that generally used in the covering of ordinary rollers; and, by means of a special process and the use of patent apparatus, this coating is moulded into sharp angular ridges. In the ordinary roller the grinding is principally effected by the large grains of emery with which the outer surface of the roller is covered. These grains are irregular in form, some being adapted to penetrate between the points of the cards, and others not being so adapted; and as the grains which do not penetrate only act on the extreme tips of the card teeth, they have a tendency to produce hooked points. The disposition of the grains upon the surface of the roller is of necessity quite irregular, so that there is no continuous penetration, and the effect produced by the grains which are best adapted to produce a point upon the card is greatly neutralised by the action of the other grains. As the grinding is effected by a comparatively small number of grains of emery, the grains which are brought most into use are liable to become detached, and the efficiency of the roller is thereby greatly impaired. In the patent filleting the ridges are of perfectly regular formation, and the grains of emery composing them are compactly cemented together, so that there is less tendency for the grains to become detached, and the loss of a few grains does not impair the efficiency of the roller to any great extent. When in use these ridges penetrate thoroughly between the points of the card teeth, and, being of regular formation, their action upon the cards is more regular than in the case of the roller covered in the ordinary manner. Their card-mounting machine used for mounting card fillets upon cylinders, doffers, &c. of card-engines, is a capital specimen of sound workmanship, and judging by the sale it has had amongst the leading firms in the Yorkshire manufacturing district, it must answer its purpose most creditably. In mounting, the card is passed, teeth upwards, through an open trough, in order to guide it on to the cone drum, which has three divisions, 6½ inches, 7 inches, and 7½ inches diameter respectively. It passes first over guides, and afterwards over a curved plate, which passes it on to the cylinder. In varying the diameters given above, the object is to obtain an increasing tension, and it will be obvious to the reader that the second diameter of the drum being greater than the first it will require more length of card to cover the surface, and consequently will take the card over the first guide quicker than the revolution of the guide itself. This applies, of course, to the third diameter. The card is stretched and a strong tension obtained, but so gradually and in such a manner, that the most delicately made card sustains no injury. The tension is put on the back of the card and by altering the position of a weight on a lever which presses on the card passing through the trough the tension may be increased or diminished. The drum, which revolves freely as the card passes over it, is covered with leather, so as to hold the card firmly. It is mounted on a carriage fitted to slide on a bed, across which it is moved by means of a screw, driven by a chain pulley or by a handle as required. The cylinder is turned by means of the double purchase jack. For every inch of card, the change wheel has 32 teeth. This arrangement causes the sliding carriage to move along the bed a distance equal to the width of the card while the cylinder is making one revolution. This ensures mechanical accuracy in the winding of the card on the cylinder and at the same time an evennesss of tension. This exhibit is well worthy the attention of those interested in productions of this class.

MESSRS. THOMAS FLEMING, SON & CO., WEST GROVE MILLS, HALIFAX, who, as manufacturers of leather beltings and card clothing of all classes, are well known throughout the textile world, show an assortment of goods of their varied manufacture that must command the greatest attention. The specimens of leather beltings include some fine samples for main driving purposes of various widths up to 60 inches, capable of transmitting 500 horse-power. It can be seen at a glance that the material and workmanship is of no mean order, but of the highest class. As regards the material, it is guaranteed to be of the best oak bark tanned leather, and as regards the workmanship, an inspection of the case will satisfy the observer. In addition to the belts of large proportion, there are several specimens of single and double thickness in various widths, for almost all purposes to which leather belting is adapted, including some capital samples for use in wet spinning, and for general out-door work, where the changes of temperature and the excess of moisture affect prepared leather. The exhibit includes combing and preparing leathers and the different other requirements in the textile trades, all of which show that experience has been brought to bear in their production. Messrs. Fleming also show card clothing in leather, wood and metal for the carding of flax, tow, jute, wool, silk, &c. This portion of the exhibit is worthy of special mention, and in point of merit they are fully equal to the samples of leather goods. The cards for use on flax, tow, and jute are fine specimens of solid but yet comparatively light workmanship; in the manipulation of the above materials they must prove of great utility to the user. The lighter makes of cards, especially those for silk, show that they are well adapted for the work they have to perform. There are numerous samples of needle-pointed iron and steel teeth, steel pins, &c., which combine with the other specimens in making up a display for which this firm deserves to be highly congratulated. Messrs. Fleming, Son and Co. are well known exhibitors at Industrial Exhibitions, and in putting such a display before those interested in their manufactures, we are sure the result will prove highly satisfactory to themselves.

MESSRS. BIRKETT & ROBINSON, ALBION BRASS WORKS, CLECKHEATON, show a variety of fittings, including water and steam guages, steam valves and taps, tallow caps, lubricators, fire brigade appliances, and various kinds of other articles in brass, gun-metal, and iron. The whole of this display reflects great credit on this firm as it is of great merit. The best material and skill has been brought to bear on the different specimens, perhaps the article most deserving of notice being their "universal" steam engine lubricator, an illustration of which we give. It

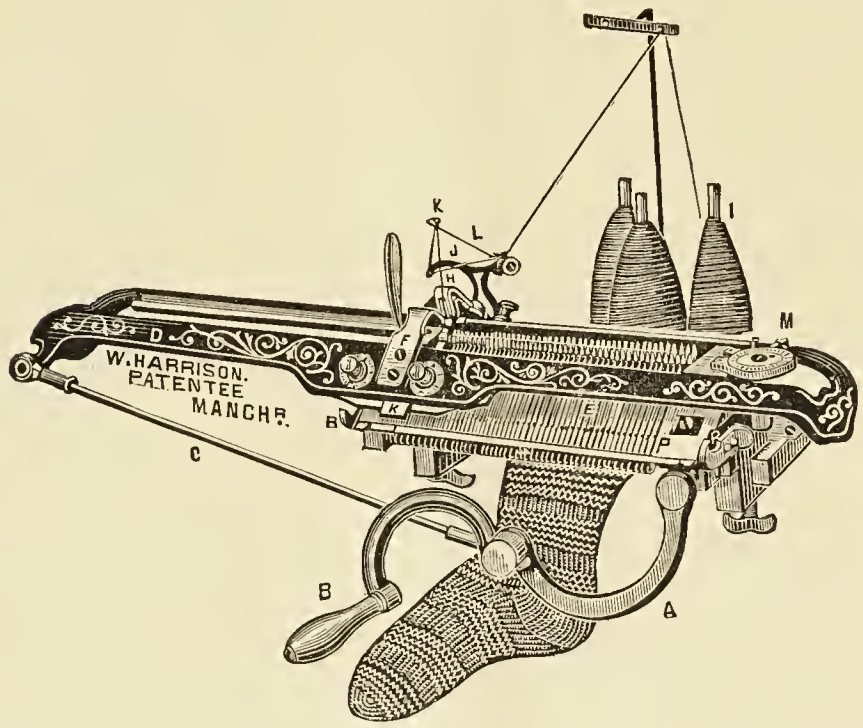


is simple and continuous in its action. By ordinary lubricators the system of giving tallow or oil to the cylinder is more or less intermittent, and in very few cases is the supply regular, it is therefore of the utmost importance to users to try and secure the benefits arising from the use of good lubricators, as the wear and tear of the piston and piston rods is reduced to a minimum. In the displacement lubricator the steam enters and mixes with the lubricant until it is converted into water and condensation; as the water increases the lubricant rises and overflows into the cylinder—or at least should do so. It is difficult to say how and when the lubricant enters the cylinder, as the water and tallow or oil are kept at boiling point by the action of the steam. It undoubtedly, therefore, cannot be called a continuous feed, as the condensation of the steam varies according to the change of the temperature of its surroundings. To allow the high-pressure steam to mix with the lubricant until the former is condensed into water is most injurious to the facing and joints of the cylinder, for by mixing the steam with the tallow or oil for so long a time the latter is transformed into oleic acid, which is highly detrimental to any metal it may come in contact with. The "universal" lubricator is worked by a mechanical contrivance, which supplies a regular quantity of tallow or oil as may be required, so long as the engine is at work. It is strong in construction, neat in design, and of excellent workmanship. It is self-acting and self-contained, having no outside taps or valves. The interior may be seen at pleasure, by simply removing the cover which is held down by its own weight. It is made in various sizes and offered at such low prices that it cannot fail to command the attention of users. The action of the lubricator may be seen by the following brief description:—A and B lever and ratchet wheel motion, operating worm C, and worm-wheel D. The latter gives rotation to the inverted hollow plug E The tallow from the cup F passes into the cavity in G. in plug E, by entrance way H and is discharged at J; it passes into the cylinder by way of K The entrance way H and exit J occupy such positions that one is closed when the other is open; any steam entering the cavity G passes up the pipe L, and is discharged above the level of the tallow. The rack may be worked by a cord from radius bar, or eccentric rod of engine.

MESSRS. JAMES YATES & SON, CARD MANUFACTURERS, SPRING FIELD MILLS, CLECKHEATON, have evidently, judging by the excellence of their exhibit, been at no small trouble and expense in bringing before the notice of the woollen, worsted, and cotton branches of the textile trade their varied assortment of cards for manipulating the above fibres. Their exhibit reflects great credit on the firm, and shows that in the preparation of the different samples a thorough knowledge of the requirements of the trades has been brought to bear in their production. The specimens of cards, both leather and vulcanised rubber, have teeth of the best hardened and tempered steel wires, the counts of which vary from 70 to 150, according to their requirements. The case also contains samples of wire and filleting in the different stages of manufacture. It addition to the above, this firm exhibits a Patent Fast Fillet Machine, which is in operation daily, giving those interested every opportunity of judging of the capabilities of this excellent machine. It is simply perfect in its action, the regularity with which it sets the teeth, and the great speed at which it works, with the mechanical precision of its movement, show that it is

thoroughly adapted for producing work of a high-class character. Messrs. Yates and Son have had the machine designed specially for their own use, and with it they guarantee to turn out a superior class of work at a very cheap rate. They have an undoubted advantage in possessing a machine having such a number of improvements. These improvements, which are patented, include some for the picker saddle, the flattening motion, the clips, the space motion for cotton, and a double socket crown, &c. When in operation it is capable of setting teeth, which are perfectly finished, at the rate of 350 per minute, which we think is a proof of its excellence in producing work at a rapid rate. An inspection of the finished card as it runs from the machine will repay the user of this class of manufacture. It undoubtedly should be seen in operation to thoroughly appreciate its adaptibility for the work it has to perform.

MR. W. HARRISON, 128, PORTLAND STREET, MANCHESTER, shows improved knitting machines, which must undoubtedly prove a boon to a large section of the population, not only of the textile manufacturing districts, but to all others. To the manufacturers of knitted goods of every variety, this improved knitter supplies a long felt want. It is capable of producing every variety of fancy knit goods, such as socks, stockings, shawls, jackets, underclothing of all descriptions, table-covers, counterpanes, &c. It contains all the essential features of the ordinary knitting machines, added to which are many improvements, the result of long practical experience and earnest study of the mechanism of the machines, which have been brought to bear upon them by the patentee, Mr. Harrison.



In the illustration, we give a prospective view of the machine it is made in various sizes, according to their requirements, the average being two feet long by 8 inches wide. It may be attached to an ordinary table when in use by thumb screws. It is operated by the crank A, and turned by the handle B, a connection being established by the rod C, with the carriage D, which traverses backwards and forwards over the needle-beds E, the grooved plates in which the needles slide, there being two, one back and one front. The needles used are those known as tumbler or latch needles. On the carriage are mounted a pair of knives, or latch openers F, whose function is to open the latches in advance of the yarn-carrier G, at the extremity of the holder H. The yarn is brought from the bottom stand I by means of the bridge J, going through two holes thereon to the loop K, on the end of the tension spring L, thence to the guide G before named. The dial plate M to the right is an indicator, which registers the number of rounds knit, and which, to rivet the attention of the operator, is furnished with a bell, which may be set to ring at a required moment. The needles are kept in their proper position by a retaining bar N, which is, when required, easily withdrawn for the insertion of a new needle. Projecting below the crosspiece at the bottom of the needle-bed are a number of springs, one for each needle, termed rests or stoppers. When the needles are to be put out of action, they are drawn down by a small instrument called the needle hoe. When needed in action the springs above mentioned are pushed up, which operation elevates the needles to the proper position. As shown in the illustration, they are all elevated for working. On the shank of the needles there is a projection, shown at P., which is termed the heel of the needle. It is the action of the cam on this projection which elevates and depresses the needle. The mode of operation is as follows: Being supplied with yarn, the thread is conducted through the eyelets of the bridge J, thence through the loop K of the tension spring L, down through the carrier G. The proper adjustment of the needles having been made, the thread is secured and the operation of the machine commenced. By turning the handle B the carriage is brought across the needles, the thread-carrier travelling closely after the knives, which go before to open the latches of the needles. The carrier then lays a line of yarn along the groove or channel between the two rows of needles, and beyond which position the hooks of the needles have been advanced by the action of the cam. This advance and retrogression of the needles is caused by their heels entering the channel or groove between the cams. As the needles retire the hooks lay hold of the thread, the latches close upon the hooks, and the thread is thus securely held. A second traverse of the carriage leaves another thread to be taken up by the needles, the first thread, in the form of a loop, having been, on the second advance of the needles, slipped upon the needle shank. As the needles again retire, enclosing the second thread, the first loop slips over the latch and hook, and forms the first series of stitches composing the web. The latter, by the repetition of these movements, rapidly grows, and is drawn down by a weight suspended from it. Mr. Harrison has some machines at work on a great variety of articles, and judging by the interest shown in them by the numbers of visitors, we should imagine that they are commanding a ready sale. As to the merits of the machine as a Knitter, there can be no question of that, as we have had every opportunity of judging of their capabilities, and can vouch for their adaptability to all classes of work. The articles produced are an exact counterpart of hand-knit work, and have no resemblance to the many specimens of imitations of knit-work, that are in reality only woven goods; in fact the machine is essentially a Knitter. In the knitting of stockings, the heels are made with the ordinary gussets as if knit by hand, and the tops may be ribbed or plain and the proper shape given to the leg without the least difficulty. It will knit flat webs or tubes from four needles to the full number that the machine is constructed to contain. At the Crystal Palace Exhibition last year, Mr. W. Harrison received one of the highest awards for his many improvements and this against many competitors, who failed to obtain awards. For its superiority of mechanism and the wide range of hosiery it is capable of knitting, it undoubtedly stands the first in our opinion in the market. Mr. Harrison will we are sure be glad to furnish every information to intending purchasers respecting them. We may add that they are manufactured in various sizes to suit different classes of users at prices which seem to us very low indeed, when taking into consideration the great usefulness of the machines. To manufacturers of general hosiery, to managers of institutions, schools, and other establishments and to the heads of large families they ought to be a great boon, as they may be employed very advantageously in the production of articles, that are really necessary requirements at a very cheap rate considering the time and labour saved.

The figures of French foreign trade for the first eight months of the year are as follow:—

IMPORTS.

	1882. frs.		1881. frs.
Alimentary products	1,063,841,000	....	1,140,914,000
Raw materials necessary to industry	1,516,889,000	....	1,484,535,000
Manufactured goods	457,059,000	....	363,101,000
Sundries	187,736,000	....	171,238,000
	3,235,525,000		3,159,788,000

EXPORTS.

Alimentary products	540,816,000	....	527,284,000
Raw materials	432,058,000	....	406,419,000
Manufactured goods	1,220,777,000	....	1,036,191,000
Sundries	117,407,000	....	109,008,000
	2,331,058,000		2,100,902,000

NOTICE TO ADVERTISERS.

Advertisements will be inserted at the following rates; (in all cases prepaid): *Twenty words, One Shilling; Sixpence* for each additional *Twelve words* or part of *Twelve*. The address being counted as part of the Advertisement.

Displayed Advertisements according to arrangement.

Mercantile Assistants, &c., Want Places.

GENTLEMAN of ability requires an engagement in any position of trust, where practical experience in accounts, short hand, and the general routine of business, would command a moderate salary. Would accept an engagement in Counting House or as Traveller. Address "R. C." *Journal of Fabrics* Office.

Miscellaneous.

TO EXPORTERS.—Mr. Edward Coward, of 2, Pekin Buildings, Liverpool, has considerably extended his Shipping Agency Business, and begs to inform Export Manufacturers in the Woollen Cloth, &c., districts, that he will be happy to conduct the shipment of any goods they send through Liverpool on his usual moderate terms, which may be had on application. Every facility for despatching cargo with rapidity and economy.

Mills, &c.

TO BE LET or SOLD, the WEAVING SHED, known as Albert Mill, in Garratt Street, Oldham Road, Manchester, containing 542 looms, with sizing and preparation: immediate possession. Address Matthew Miller, Esq., Sale, Cheshire.

BARN MEADOW MILL, Dukinfield, with the weaving sheds, steam engines, boilers, main gearing, gas and other apparatus, and also the new buildings, engines, shafting, fixtures, and fittings. For further particulars, apply to Mr. Wright, 79, Corporation Street, Manchester.

THE GAZETTE.

Adjudications of Bankruptcy.

Middleton Edward, Jun., Ashgreed, Yeadon and Guiseley, both Yorks., cloth manufacturer.
Slater Arthur Webster, Park Place and Sholebrook Avenue, Leeds, woollen merchant.
Baybut Fairhurst, 14, New Cannon Street, Manchester, fustian manufacturer and merchant.

Liquidations by Arrangement or Composition.

Harrison Edwin, Shipley, Fulton Street and Booth Street, Bradford, manufacturer and stuff merchant.
Kilbey William Charles, Bethnal Green Road, silkman and trimming manufacturer.
Harding Edward Charlton, trading as John Harding, Son and Co., New Brown Street and Dutton Street, Strangeways, Manchester, and Nantwich, woollen merchant and clothier.
Ewan Thomas, trading as Ewan Brothers and Junction Street Mill Company, Fountain Street and Store Street, Manchester and Norman Grove, Longsight, raiser and printer of cotton blankets and commission agent.
Dean John Benjamin, Abbey Street, Bethnal Green Road and Shrubland Grove, Queen's Road, Dalston, braid and cord manufacturer.
Tipping William, Acton Square, Salford, late York Street, Manchester, velvet and velveteen manufacturer.
Holloway George O'Connor, Cherry Orchard, and Green Valley Mill, Worcester Road, Kidderminster, horsehair, carpet and horse cloth manufacturer.
Wright Matthew and Alphonso Rowland Wright, trading as B. Wright and Son, Prospect Mills, Wibsey, near Bradford and Peel Place, Bradford, worsted spinners and stuff manufacturers.
Sofiano John, Mount Street, Manchester, Medlock Vale Bleach Works, near Clayton Bridge, and Bury New Road, Higher Broughton, near Manchester, bleacher and finisher.
Crossley William Thweat, William Hibbert and Frederick William Dawson, trading as Crossley, Hibbert and Co., Rainow and Tib Lane, Manchester, bleachers and finishers.
Dyson Edwin, trading as Dyson and Armitage, Priestroyd Mills, Huddersfield, yarn spinner and woollen manufacturer.
Entwisle Joseph, Lower Washford Mill and Washford House, both Lower Washford, Congleton, silk dresser.
Gould John, trading as Joseph Gould and Son, Leek, silk manufacturer.

Dividends.

Hopwood John (Liquidation), Oswaldtwistle, power loom cloth manufacturer. 1st dividend, 2s. 6d.; W. Heppard, Richmond Chambers, Blackburn.
Lees Thomas, trading as Thomas Lees and Co. (Liquidation), 1, Tithebarn Street, Liverpool and Litherland, cotton broker. A further dividend, 1s.; any Saturday between 10 and 1. T. H. Crane, trustee.
Mellor Joseph and George K. Stubbs (Bankrupt), Macclesfield and Sutton, near Macclesfield, silk dyers. 1st and final dividend, 20s.; on and after October 14th between 10 and 12. G. Ibeson, Derby Street, Macclesfield.
Gibb John, trading as Gibb and Co., Govan, cloth manufacturer. 1st of 2s. in £; Moore and Brown's, Hope Street, Glasgow, September 19th.
Gibson Hugh, late Hillsborough Terrace, Hillhead, previously Renfrew Street, Glasgow. Equalising J. Home s, 2, Randolph Place, Edinburgh, September 23rd.
Haswell Thomas, trading as Thomas Haswell and Co., Glasgow, calenderers, &c. 1st and final, R. B. M'Caig's, 183a, West George Street, Glasgow, September 18th, at 12.
Brooks David, trading as D. Brooks and Co. (Bankrupt), Leek, silk manufacturer. 1st dividend, 6s.; on and after September 26th. J. A. Bishop and M. Knowles, Haywood Street, Leek.
Illingworth John, trading as John Illingworth and Co. (Liquidation), Ilkley and Baildon, Yorks., worsted spinner. 1st dividend, 4s.; on and after September 18th. W. Glossop, 33, Kirkgate, Bradford.
Crossley Lewis (Liquidation), Halifax, dyer and finisher (separate estate). 1st and final dividend, 20s.; J. P. Birtwhistle, Crossley Chambers, Northgate, Halifax.
Constantine Z., Cater Street, Bradford, stuff, yarn and cloth merchant. A first and final dividend of 2s. in the pound; at the office of Mr. William M. Gray, 16, Kirkgate, Bradford, on and after September 21st.

Trustees Appointed.

Mellor Joseph and George K. Stubbs (Liquidation), Macclesfield and Sutton, silk dyers. Trustee, G. Ibeson, Macclesfield, accountant.
Smedly Charles, trading as Charles Smedly and Co. (Liquidation), Mosley Street, Manchester and Stockport, mantle manufacturer. Trustee, J. White, Norfolk Street, Manchester, accountant.
Waddington William (Liquidation), Padiham, cotton spinner. Trustee, W. Milne, Brown Street, Manchester, accountant.

Dissolution of Partnerships.

Barker W. and D., High Street Shed, Heywood, cotton manufacturers. Debts by William Barker.
Hamilton and Riley, Birch-in-Lee Mills, Royton, bleachers and wadding manufacturers. Debts by James Hamilton.
Matthews W. E. and Co., 79, Piccadilly, Manchester, silk merchants. Debts by William Edwin Matthews.
Matthews, Jones and Co., Savile Row, Burlington gardens, woollen warehousemen.
Tipton and Falcon, Liverpool, cotton brokers. As regards Robert Falcon.
Scholefield H. and Cropley W., 1 and 2, Falcon Street, London, wholesale mantle manufacturers.

Bills of Sale.

Brierley J. C., Grimshaw Lane, Chadderton, yarn agent	£21 0 0 &c.
Fielden T., Gaurholme Place, Todmorden, draper, absolute	£60 0 0
Foulkes Edward, Carhampton, draper, &c.	£130 0 0
Haigh Thomas, Albion Mill, Golcar, woollen manufacturer	£99 0 0
Morgan J. Brooklyn House., Windsor Road, Penarth, draper, &c.	£146 5 3 &c.
Steevens William S., 44, Oxford Street, tailor, &c.	£146 10 0 &c.
Wright M., and Alphonso R., Wibsey, worsted spinners	indemnity, &c.
Wright M., Norton, Bradford, worsted spinner	indemnity.
Wood William, Market Street, Bottesford, draper, &c.	£155 0 0
Bryant W E., Rose Villa, Willesden Green, costume manufacturer	£75 0 0
Benge W. H., Cousley Wood, Wadhurst, draper, &c.	£52 0 0 &c.
Chalk A., Christ Church Street, Bacup, cotton manufacturer	£50 0 0 ind.
Charlesworth N., Thongbridge, Huddersfield, waste dealer	£20 10 0 &c.
Hemingway J., Zetland Street, Wakefield, flock manufacturer	£300 0 0 ind.
Barter R A., Sterndale Road, West Kensington, lace agent	£65 0 0 &c.
Browett, F., Little Park Street, Coventry, trimming manufacturer	£1,200 0 0
Hardisty W. H., Birkby, Huddersfield, yarn spinner	agreement, &c.
Johnson H. T., Chatham, clothing manufacturer, &c.	£157 14 10
Nelson J., 88, Old Lane, Hollingwood, cotton spinner	£20 0 0 &c.
Taylor T., The Grove, Hackney, mantle trimming manufacturers, &c.	£25 4 0 &c.
Clay T., 26, Paradise Street, Coventry, late ribbon manufacturer	£35 0 0
Barraclough J., Huddersfield, waste opener and spinner	£600 0 0
Ferguson G , 159, Stockport Road, Ardwick, tailor, &c.	£560 0 0 &c.
Patchett (or Patchell) W., George Street, Cheetham, cotton waste dealer	£70 0 0 &c.
Hirst, T., Tipping Street, Ardwick, sponge cloth manufacturer, distinct partnership	£170 0 0
Slater R., Samuel Street, Leeds, woollen merchant and yarn spinner	£90 0 0

PATENTS.

FRANKLIN INSTITUTE LIBRARY.

Specially compiled for "The Journal of Fabrics" by G. G. M. Hardingham, C.E., Fellow of the Institute of Patent Agents, 191, Fleet Street, London, E.C.

Applications for Letters Patent.

		No.
Dyeing and sizing hanks. J. Conlong, Blackburn	14th Sep.	4371
Doubling, winding, and twisting yarns, &c. J. and J. Horrocks, Manchester	21st Sep.	4500
Dyeing fabrics, &c. W. R. Lake (R. S. Jennings, Baltimore, U.S.A.)	23rd Sep.	4546
Embroidering machines. A. M. Clark (J. A. Groebli, New York)	21st Sep.	4501
Feeding wool, &c., to carding machines. R. Tatham, Rochdale	28th Sep.	4613
Knitting machines. P B. Standring, Gand, Belgium	28th Aug.	4103
Knitting machinery. S. Lowe and J. W. Lamb, Nottingham	12th Sep.	4340
Knitting machinery. J. W. Lamb and E. Attenborough, Nottingham	12th Sep.	4341
Looms. J. Williams and H. Barnes, Barnsley	25th Aug.	4070
Looms. J. Dawson, Maine, U.S.A.	28th Aug.	4105
Looms. D. Anderson, Glasgow	6th Sep.	4228
Looms. J. Riley and A Orrell, Bradford	8th Sep.	4279
Looms. W Blezard, Padiham, and W. Nelson, Darwen	12th Sep.	4330
Looms. W. Smith, Heywood	21st Sep.	4515
Looms. H. Lomax, Darwen	25th Sep.	4557
Preparing wool and other fibres. J. Bailey, Keighley	2nd Sep.	4188
Producing embossed fabrics. J. Coates, Gulter Lane, London	12th Sep.	4331
Pickers. J. Snowden, Bradford	15th Sep.	4390
Printing fabrics. J. Ingleby (R. Auke, Oelsnitz in Voigtlande)	19th Sep.	4439

Recording and measuring fabrics. R. Murdoch, Glasgow	12th Sep.	4333
Spinning and doubling machinery. W. Lancaster, Accrington	7th Sep.	4263
Spinning machinery. E. Clarke, Todmorden	8th Sep.	4282
Spinning rings. B. J. B. Mills (J. Schütt and J. Wamholby, Newminster, Holstein)	28th Sep.	4603
Thread winding machines. J. W. Shephard and W. Ayrton, Longsight, and S. Hallam, Manchester	12th Sep.	4337
Temples. J. Wrigley, Bury	16th Sep.	4408
Treating leaves and stalks to obtain fibre. A. V. Newton (Sandford Universal Fabric Co., New York)	26th Sep.	4570
Wire card points. T. Morgan (F. Gillet, Aix-la-Chapelle	12th Sep.	4339
Wool combing machines. J. Dansfield and J. Issett, Dewsbury	13th Sep.	4361

Grants of Provisional Protection for Six Months.

2894	3052	3405	3470	3580	3602	3626	3628
3634	3672	3748	3765	3769	3788	3810	3823
3826	3833	3860	3875	3898	3916	3934	3939
3940	3948	4041	4056	4062	4070	4105	4113
4139	4153	4197	(All of 1882.)				

Notices to Proceed.

(Notice of opposition to the Sealing of a Patent must be given within Twenty-one days of the Notice to Proceed being advertised in the Commissioners of Patents Journal.)

Bobbin frames for looms. H. J. Lake (R. L. Cookson, Philadelphia, U.S.A.)	31st July	3634
Cotton presses. W. R. Lake (S. B. Steers, New Orleans, U.S.A.)	24th May	2467
Drying fibres, &c. Sir H. Schofield, Nottingham.	30th May	2542
Drawing apparatus. L. A. Groth (R. Serkhe, Berlin)	20th May	2386
Embroidering machines. W. E. Gedge (E. Cornely, Paris).	25th May	2483
Embroidering machines. A. M. Clark (G. A. Groebli, New York).	21st Sept.	4501
Frames for plaited goods. A. W. L. Reddie (Societé Industrielle des tresses et lacets, St. Chamond, Paris).	26th May	2254
Looms. H. J. Haddon (L. J. Knowles, Mass., U.S.A.)	31st July	3628
Looms. J. Aspinall, Ravensthorpe.	2nd May	2069
Looms. J. Brownlee, Glasgow.	3rd May	2090
Lubricating, spinning and preparing machinery.	2nd Aug.	3668
Looms for figured cloth. J. Kirkman, R. Smith, and R. Entwistle, Bolton.	2nd Aug.	3672
Lifting and raising and carrying fabrics. H. Stead, Leeds.	24th May	2463
Looms. W. Thompson, Blackburn.	25th May	2481
Looms. W. R. Still and J. Lees, Belfast.	30th May	2543
Mule spinning machines. S. Mock, Providence, U.S.A.	20th June	2928
Preparing wool. H. H. Lake (C. Fletcher, Providence, U.S.A.)	2nd May	2079
Purl and bullion for embroidery. F. and E. Stanton, Lewisham.	13th May	2262
Rag and waste tearing machines. T. R. and T. W. Harding, Leeds.	12th May	2252
Spinning machinery. B. J. B. Mills (L. Cunit and J. Culty, St. Etienne, France.)	18th Aug.	3962
Spinning machinery. A. J. Boult (C. J. Leleux, Schaerbeeck, Belgium).	24th July	3509
Spinning frames. A. M. Clark (G. Jaquith, Mayoville, U.S.A.)	4th July	3163
Shuttle box for looms. W. P. Thompson (E. Lepainteur, Paris).	24th May	2469
Spools. E. Hunt (J. C. Davis, New Jersey, U.S.A.)	8th Aug.	3765
Treating linen fibres. F. C. Glaser, Berlin.	16th May	2287
Wool washing machinery. T. G. Mullings, George Street, E.C.	1st May	2051
Wool carding engines. E. J. Brewer (C. Rüdiger, Lusatia).	22nd July	3501
Woven fabrics. E. Briggs, Bradford.	16th May	2292
Yarn winding machines. E. Ashworth, Bolton-le-Moors.	24th May	2448

Patents Sealed.

1008	1090	1091	1141	1192	1194	1215	1217
1233	1238	1243	1256	1297	1310	1419	1473
1488	1502	1523	1566	1586	1589	1602	1610
1718	2021	2196	2220	2249	2255	2584	2864
3094	3183	3362	3411				

Patents on which the Stamp Duty of £50 has been paid.

William Morgan-Brown, of the firm of Brandon and Morgan-Brown, engineers and patent agents, 38, Southampton Buildings, London, and 1, Rue Laffitte, Paris, "Improvements in knitting machines."—A communication.	25th Aug., 1879	3411
James Smith, engineer to Messrs. Walter Crum and Co., of Thornliebank, Renfrewshire, North Britain, "Improvements in apparatus for washing and otherwise treating woven fabrics with liquids."	26th Aug., 1879	3440
Thomas White, Leeds, "Improvements in wire sewing machines used in the manufacture of mill straps or bands, harness, hose pipes, boots and shoes, and other similar articles."	3rd Sep., 1879	3533
Samuel O'Neill, of Eccles, "Improvements in looms for weaving."	22nd Sep., 1879	3810
Hamilton Oliver, printer, in the employment of Messrs. John Orr Ewing and Co., of Alexander, N.B., "Improvements in or connected with apparatus for printing woven fabrics"	2nd Sep., 1879	3516
Alexander Melville Clark, 53, Chancery Lane, "Improvements in machinery for combing fibrous materials."—A communication.	27th Sep., 1879	3889
Onyas Pickles, Benjamin Smith, and Christopher Slater, all of Burnley, "Improvements in looms for weaving."	27th Sep., 1879	3900

Patents on which the Stamp Duty of £100 has been paid

John Whiteley, Nottingham, "Improvements in fabrics produced by lace machinery."	25th Aug., 1875	2981
Arthur Waithman, of Prestwich, "Improvements in manufacture of twine or cord."	4th Sep., 1875	3109
James Barbour, Belfast, "Improvements in machinery for the hackling and preparation of hemp, flax, jute, and other fibrous substances."	1st Oct., 1875	3422

Copyright of Designs.

(Registered during September 1882.),

Class VI., Carpets.

385,491-99	The Heckmondwike Manufacturing Company (Limited), Yorks.
385,627 8	Wells and Le Mottee, 57, Avenue Road, London.
385,702	Shepherd and Beveridge, Kirkcaldy.
386,039	The Heckmondwike Manufacturing Company (Limited), Yorks.
386,179-81	H. R. Willis and Co., Kidderminster.
386,227-29	H. R. Willis and Co., Kidderminster.
386,262-63	Hendry, Whyte and Strachen, Kirkcaldy.
386,363-69	A. F. Stoddard and Co., Elderslie.
386,373	Starey Bros and Co., Lancaster.
386,374-77	H. R. Willis and Co., Kidderminster.
386,394-95	The Heckmondwike Manufacturing Company (Limited) Yorks.
386,543	John Crossley and Sons (Limited), Halifax.
386,716-17	The Kirkcaldy Linoleum Co. (Limited), Kirkcaldy.
386,718-44	Cooke, Sons and Co., London, and Liversedge.
387,037	A. F. Stoddard and Co., Elderslie.
387,141	The Kirkcaldy Linoleum Co. (Limited).

Class XI., Furnitures.

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385,412	S. and F. Sternberg, 44, George Street, Manchester.
384,532-36	R. Dalglish, Falconer and Co., Manchester and Glasgow.
385,577-80	S. and F. Sternberg, 44, George Street, Manchester.
385,581-84	The Rossendale Printing Co., Manchester.
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385,632	S. and F. Sternberg, 44, George Street, Manchester.
385,704	Seligmaun and Haarbleicher, Manchester.
385,777	R. Dalglish, Falconer and Co., Manchester and Glasgow.
385,854	R. Dalglish, Falconer and Co., Manchester and Glasgow.
385,934	R. Dalglish, Falconer and Co., Manchester and Glasgow.
386,025	Daniel Lee and Co., Fountain Street, Manchester.
386,026-35	Salis Schwabe and Co., 41, George Street, Manchester.
386,110	R. Dalglish, Falconer and Co., Manchester and Glasgow.
386,245,46	The Rossendale Printing Co., Manchester.
386,276-313	Weiss Fries, Mulhouse, Alsace.
386,324-25	William Rumney and Co., 53, Portland Street, Manchester.
386,362	R. Dalglish, Falconer and Co., Manchester and Glasgow.
386,604	R. Dalglish, Falconer and Co., Manchester and Glasgow.
386,967	R. Dalglish, Falconer and Co., Manchester and Glasgow.
387,128	The Rossendale Printing Co., Manchester.

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Contents.

	Page.
The Cotton Spinners' Association ...	49
Cotton	50
Manufacture of Printed Fabrics	50
Rhea and Ramie Fibre	51
Fast Colours for Hosiery...	51
The Weaving of Tapestry, Table Covers and Bed-Mats at Paisley	52
The Duties on Coloured Cotton in the United States	52
The Use and Abuse of Double Cloths	52
The Reviving of Irish Industries... ...	53
Scientific and Art Notes	53
ORIGINAL DESIGNS	54
Monthly Trade Reports	54
The Twist in Woollen Yarns...	54
Original Designs for Worsted Coatings and Tweed for Suitings	55
Industrial Exhibition at Halifax	56
A New Illuminating Gas...	56
MACHINERY, TOOLS, &c.:—	
Tate's Electric Apparatus for Closing Valves and Stopping Steam Engines	57
Steel for the Manufacture of Spindles, Flyers and Fallers...	57
New Colours	57
Mother-of-Pearl Designs on Tissues ...	57
Odds and Ends	58
THE GAZETTE:—	
Bankruptcies, Liquidations, &c. ...	58
Dissolutions of Partnership	59
Bills of Sale	59
LETTERS PATENT:—	
Applications for Letters Patent, etc.	59
Copyright of Designs	60

ILLUSTRATIONS.

Original Design for a Linen Table-Cover.
Original Design for Dhootie Borders.
Original Design for a Cretonne.
Tate's Electric Apparatus for Closing Valves and Stopping Steam Engines.

Notices.

The Half-Yearly Subscription—payable in advance—including home postage, is 3s. 6d. Cheques and Post Office-Orders to be made payable to H. & R. T. LORD, 3, Gerrard Street.

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To prevent any misunderstanding, all Articles sent to the *Journal of Fabrics and Textile Industries* for publication, will be considered as offered *gratuitously* unless it is stated explicitly that remuneration is expected.

Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers in making enquiries of, or opening accounts with Advertisers in this paper, will kindly mention the *Journal of Fabrics and Textile Industries* as the source from whence they obtained their information

The Cotton Spinners' Association.

AT the last meeting of the Committee of this Association, the President reviewing the returns of the Board of Trade for the nine months ending 30th of September, said that he viewed the figures as on the whole unfavourable to the country. In cotton yarns and twist there was a decrease of over 10,000,000 lbs. weight in the total exports. It was true there was an increase under this head in the cases of Germany, Holland, Belgium, and one or two other of the European countries, but even this he did not regard as satisfactory, for looking further down to "cotton manufacturers' piece goods," it was noticeable that in most cases where countries had taken an increase of yarn there had been a great falling off in piece goods, indicating an increase in the looms at work in other countries, and that other countries are gradually and unmistakably overtaking ourselves in the competition of the world's market for cotton goods; the total decrease of the exports of yarn and piece goods together, being the heavy total of about 320,000 lb. weight. He considered that we were now but experiencing the natural and inevitable results of the course taken by the operatives and the Legislature in the matter of fettering the action of manufacturers through the operation of Factory Acts and other trade regulations, which now placed the British manufacturers at a disadvantage as compared with the less restricted position of our foreign competitors. He also pointed out that while the consumption of cotton in Great Britain during the last ten years had increased from about 60,500 bales per week to 70,500 bales per week, an increase of 17 per cent., the consumption on the Continent had increased from about 42,000 bales per week to 60,000 bales per week an increase of 43 per cent., and as a further evidence of the growing competition mentioned, that the machinists of the country were busy at the present time with the manufacture of machinery for our competitors. It was thus more and more urgent that the Legislature and the operatives of this country should see to it, that they should substitute foresight, and that very quickly, for the shortsighted policy which had for some time prevailed in the respects named. Amongst other questions that of damp cotton was considered, and it was mentioned by several members of the committee that there was no amelioration in the matter of damp. One member handed in the record of his own mill for the current year, which showed an average loss by damp alone of nearly 5½ per cent. of the cotton purchased. The three months previous averaged 4½ per cent., showing that this great evil is a growing one. Damp in the new crop is also complained of. Other subjects were considered, one of which was the great anomalies in the rates charged for the carriage of cotton and goods. Not only is it a fact that cotton which—at all events in its raw state—is the most easily carried of all goods, is rated in the highest classification; but the following particulars relating to Wigan, show conspicuously how the railway companies' claim to keep within their legal carrying rates, and yet charge in total rates which are regarded by the trade as excessive, and unsustainable on any basis of equity.

COTTON BETWEEN LIVERPOOL AND WIGAN.
Lancashire and Yorkshire Railway Company.
Rate per ton, 6s. 8d.

	s.	d.
Distance, 18¾ miles; maximum rate per ton per mile allowed by Act of Parliament, 3⅝d.	5	7½
Two terminals and other charges	1	0½
	6	8

London and North-Western Railway Company.
Rate per ton, 6s. 8d.

Distance, 21 miles; maximum rate per ton per mile allowed by Act of Parliament, 3d.	5	3
Two terminals and other charges	1	5
	6	8

CLOTH BETWEEN WIGAN AND MANCHESTER.
Lancashire and Yorkshire Railway Company.
Rate per ton, 8s. 9d.

Distance, 20 miles; maximum rate per ton per mile, 3⅝d.	6	0
Cartage in Wigan and Manchester, two terminals, and other charges	2	9
	8	9

London and North-Western Railway Company.
Rate per ton, 8s. 9d.

Distance, 17 miles; maximum rate per ton per mile, 3d.	4	3
Cartage in Wigan and Manchester, two terminals, and other charges	4	6
	8	9

WARPS AND BUNDLES BETWEEN WIGAN AND MANCHESTER.
Lancashire and Yorkshire Railway Company.
Rate per ton, 10s. 10d.

Mileage as above	6	0
Cartage, terminals, &c.	4	10
	10	10

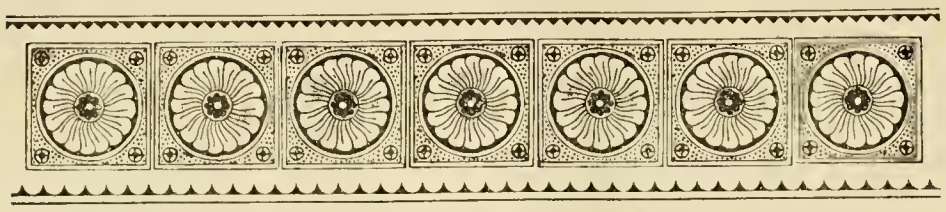
London and North-Western Railway Company.
Rate per ton, 10s. 10d.

Mileage as above	4	3
Cartage, terminals, &c.	6	7
	10	10

In this case the extras are actually 50 per cent. greater than the principal item of carrying.

To our Readers.

Our readers will perceive that, in the present issue of our Journal, an addition has been made to the title, and we beg to inform them that, in future, it will be known as "The Journal of Fabrics and Textile Industries." Whilst thanking the numerous firms interested in the textile trades not only throughout the United Kingdom, but abroad, for their thorough appreciation of the efforts we have made in issuing a publication devoted to their interests, and for the liberal share of patronage with which they have favoured us, we beg to state that under the title of the "Journal of Fabrics and Textile Industries," we shall spare no efforts to render the work, in every way, still more acceptable to our subscribers, and thus merit continued and increased support.



Cotton.

INDIA was undoubtedly the original seat of the cotton manufacture in the East, as China was of the silk, and from that country the industry was carried into Persia and Egypt, and from thence, at a much later period, into Europe. The fact that the art was practised in India from remote antiquity is borne out in Holy Writ, for although the word "cotton" is not used in our English translation of the Bible, still in the Book of Esther, in the account of the feast given by Ahasuerus, whose dominion extended from India to Ethiopia, occur these words, chapter 1, verse 6—"There were white, *green*, and blue hangings." The Hebrew word translated *green* is Karpas, the Sanscrit Karpasa, and the Hindu Kapas, which means cotton (in the pod). The passage ought to be, "Where were white and blue (striped) cotton hangings?" from which we infer that although the manufacture of cotton was not known generally as early as that of wool, silk and flax, still it must have been known to some Eastern nations 521 B.C. Herodotus, who wrote about 445 B.C., speaks of its manufacture amongst the Indians being in a very advanced state in his time. He says, "They possess a kind of plant which, instead of fruit, produces wool of a finer and better quality than that of sheep; of this the Indians make their clothes." Nearchus, one of the Admirals of Alexander the Great, writing 327 B.C., says—"The Indians wear linen garments, the substance whereof they are made growing upon trees; and this is indeed flax, or rather something much whiter and finer than flax. They wear shirts of the same . . . and veils . . ." Strabo, the geographer, 54 B.C.-24 A.D., quoting from Nearchus, says—"The Indians are celebrated for their flowered cottons or chintzes, and for their various and beautiful dyes." He also states "that in his own time cotton grew and was manufactured into cloths at Susiana, north of the Persian Gulf." The cotton plant and the knowledge of its manufacture must have been introduced into Egypt from India, through Assyria probably. Pliny, the naturalist, 23-79 A.D., says "in Egppt towards Arabia, there grows a shrub, which some call gossypium, and others xylon, from which the stuffs which we call xlina are made It is small and bears a fruit resembling the filbert, within which is a downy wool which is spun into thread. . . . Beautiful garments are made from them for the priests of Egypt." The same writer also speaks of the manner in which the fabrics were dyed by the Egyptians in his time. He writes—"In Egypt they employ a very remarkable process for the colouring of tissues. After pressing the material, which is white at first, they saturate it, not with colours, but with mordants that are calculated to absorb colour. This done, the tissues, still unchanged in appearance, are plunged into a cauldron of boiling dye, and are removed the next morning fully coloured. It is a singular fact, too, that although the dye in the pan is of a uniform colour, the material when taken out of it is of various colours, according to the nature of the mordants that have been respectively applied to it; these colours, too, will never wash out." From Arrian, an Egyptian Greek historian, who lived late in the second or early in the third century of the Christian era, we learn that in his time the Indians exported calicoes (from Calicut in India, muslins, from Mosul in Mesopotamia), sashes striped with different colours, purple cloths and muslin of the colour of mallows, to all ports on the Arabian and East African coasts, that they were made in the interior provinces of India, that Masalia (Masulipatam) was then, as it is now, noted for the excellence of its piece goods, that the muslins of the Bengal provinces were superior to all others and were called by the Greeks Gangitika, denoting that they were made near the Ganges." As cottons and muslins were introduced into Arabia and the bordering states, their manufacture was taken up and spread from country to country by the ever-active and enterprising Saracens. At a later date, towards the close of the thirteenth century, Marco Polo, who visited many of the chief cities of Asia, states that cotton was produced in vast quantities in Persia and the countries bordering the Indus and that it was the principal article of manufacture throughout India. He also mentions that, in the Chinese Province of Fokien, cottons were woven and worn, although silk was the usual dress of rich and poor; but the plant was not cultivated to any great extent until after the Empire was conquered by the Tartars (a race of heroes from Northern Asia) about the middle of the fourteenth century.

The manufacturers of woollen and silk goods stoutly resisted this innovation; but, as cotton goods were found to be most suitable for clothing in a tropical climate, their opposition was soon overcome, and about 1368 A.D. the cultivation of the plant became general throughout China; still, at the present time, the Chinese do not produce sufficient for home consumption, and they therefore import large quantities of the raw material from India. As we have before mentioned, we are indebted to the Moors (Saracens) for the introduction of the cotton manufacture into Europe. Through them, in the tenth century, the plant was grown and made into clothing in Spain. At Barcelona cotton sail cloth was woven and the same town was noted for fustians. Paper was made in the same country from cotton, and in the thirteenth century the knowledge of this art extended to Italy. In the fourteenth century strong cottons, fustians and dimities were made in Venice and Milan, but no light goods were woven in Europe, except by the Moors, until the invention of English machinery. It would appear that the manufacture of cotton gradually spread further north until it reached the commercial and manufacturing towns of the Netherlands, and that from Flanders (Belgium) during the Spanish wars against that country, came numerous Protestant refugees to England, some of whom, settling in Manchester, commenced what was to the English then a new trade. There were many restrictions imposed upon foreigners to prevent them from beginning business, as masters, in any trade previously carried on in this country, but the authorities gladly welcomed any new branch of industry and encouraged these new settlers by aid rather than hindered them by restrictions.

(*To be Continued.*

Manufacture of Printed Fabrics.

In printing with colours on dyed fabrics either deep colour has been hitherto used on a clear ground, or when the ground is deep a mordant colour has been applied, these methods often give imperfect results, and in the latter case the fabric is more or less deteriorated by the action of the mordant. According to an invention, a specification of which has been recently issued, special colours are employed which may be termed substitution colours, acting by oxidating or reducing and colouring the existing tints, and taking their place without injuring the fibres. Thus on grounds black, blue, grey, or of other tints deep or clear, can be produced substitution colours, red, green, violet, yellow, and others, whether the fabric be entirely of wool or of wool mixed with vegetable fibres. The substitution colours are composed of salts or solutions having for base, iron, copper, tin, zinc, chromium, lead, aluminium, and other metals and soluble salts of manganese, chlorates of soda or potassa and other oxidating salts with glucose, sugar, molasses, or other vehicles. With these bases are mixed aniline colours, yellow, violet, green, red, blue, or others made up with the mucilages usually employed in printing. Several of the salts may be mixed so as to produce complex bases resulting in very fast colours. The printing may be applied to fabrics already dyed, and several of the substitution colours may be printed thereon, also on clear tints ordinary colours may be applied to give depth. After steaming and washing the colours come out brilliant and quite fast. As an example for producing a substitution yellow, one of the metallic bases above mentioned is dissolved in a quantity depending on the greater or less depth of tint of the fabric, and to this are added one of the salts mentioned and a solution of aniline yellow. The mixture being thickened is printed in the usual way, and in like manner other colours are obtained.

Rhea and Ramie Fibre.

(*Continued from Page* 38)

THIS fibre admits of no retting action on the stalks; steeped and fermented in water, or exposed to the air, it is decomposed or reduced to a short and weak fibre, saturated with tannic acid, and spotted with tan bark. The fibre can only be obtained by separating first the injurious outer bark, this being removed from it by the ordinary process of retting and bleaching on the uncoated and free filament. The Chinese skin the stalk, and clean the outer bark off with a knife, and each man produces, in this manner, from one to two pounds per day of raw product.

The best mode of bleaching is said to be that of Bertholet. It consists in first steeping the fibre or vegetable tissues in boiling water, and then rinsing them in a copious supply of water in order to disengage them from soluble matter. When the water has entirely dropped off, they are plunged into a bath of alkaline lye, which is raised to the boiling point; they are then immersed in a solution of hypochlorite of lime or another alkaline hypochlorite. The tissues are washed in a copious supply of water, afterwards immersed in water acidulated with sulphuric acid, washed with soap and water, then rinsed in water, and dried. The attempts, which have hitherto been made to discharge the gum, renders the samples of fibre tender, rotten, of bad colour, and lustreless. No reliable machine for stripping the fibre and taking off the outer part has yet been put in operation. Such a machine would do much towards placing this plant among the permanent and valuable products of agricultural industry. The primary conditions which a machine for the purpose has to fulfil, are, first that it would be so cheap that it would be within the reach of the bulk of the cultivators of this country; second, it must be so easily worked that the ryots of ordinary intelligence in India should be able to use it; and third, it must be so simple that any village blacksmith should be able to put it in order when required. Such a machine would effect a radical change for the better in the present rude and defective mode of separating the fibre. Practical persons, familiar with the treatment of textiles, know the impossibility of cleaning thoroughly any fibre, dried or green, by the continuous action of machinery, either with drums or beaters, the cleaning instruments cannot turn out the filament without a certain quantum of chaff and other refuse entangled in the fibre. All experiments on this point have failed, and proved the insuperable difficulty of expelling by continuous friction, all the particles of pith that have penetrated into the fibre. It is only through a scraping process, acting in a backward and forward direction, that a perfect cleaning can be obtained. Ramie is a most exhaustive crop for the land, and requires much manuring, and the yield of fibre is small, compared with other plants. It can only be obtained in small quantities at present, and we can only expect supplies from such a country as China, where labour is cheap and population dense. In 1871, the Government of India offered a reward of £5000 for the invention of a good machine, but only one was produced in response, by Mr. John Greig, of Edinburgh, which did not meet the requirements, but received a bonus of £1 500. Although the machine worked well and was much superior to hand labour, it was too slow, in consequence of its cleaning only one half of the stems at a time, necessitating, indeed, five distinct operations. The stems had to be put into the machine, taken out, the ends reversed by hand, and again put in, and finally taken out before they were thoroughly cleaned. This machine has not since been adapted by the inventor to practical use. In 1873, M. Emile Lefranc, of New Orleans, patented an improved decorticating machine, which he asserts removes the fibre from its tenacious bark and pithy envelope. The machine is figured and described in the Report of the American Commissioner of Agriculture, for 1874, Washington. In 1874, M. Felix Roland, of Paris, invented a machine for decorticating the ramie plant by separating the fibre from the bark and the bark from the stalk. It is described as simple and moderate. It is designed, not only for the treatment of ramie, but of other textile plants of which the fibres are utilised for the fabrication of tissues. The stems can be worked by it either green or dry, and whether retted or not, but it does not thoroughly separate the fibre from the stem. In 1879, M. A. Favier, of Nimes, invented a process for operating on the dry fibre, removing it perfectly and entirely from the woody stem, at a cost of only about £4 per ton. He forwarded me samples of the fibre as it issued from his machine, without combing or unginning, and yet perfectly fit for spinning. He had not been able to obtain green stems to operate upon. A committee was appointed in India, in September, 1879, to conduct the experiments for the renewed prizes offered by the Indian Government for the best machine or process for the separation of the bark from the stem, and the fibre from the bark. There were twenty-four applications to compete, but the results of the experiments at Saharanpore were not satisfactory, although some progress was shown. In May, 1871, a cleaning machine was patented in America, by Mr. Adolph Blanchard, of New Orleans. Dr. R. Collyer, who has long given his attention to fibres, has invented a machine which he alleges will operate most effectively on one and a-half tons of rhea stems per hour, and extract from the same 210 lbs. of clean marketable fibre, worth at a minimum £35 the ton; the total cost of every kind he states to be but £10 per ton. He first boils the whole stems with soap water. Mr. S. C. Lister, of Manningham Mill, Bradford, commenting on my paper (*Journal*, vol. xxi, p. 841) in 1873, spoke favourably of the fibre-cleaning machine of Sandford and Mallory as useful for the purpose. Messrs. van Maanen and Moorrels of Satatiga, Java, reported, early in 1880, that after many years of experiments, at heavy expense, they could not fully attain the desired object of separating from the green stem the fibres in a clean and white condition, free from gummy and woody constituent parts. They could, indeed, approach it by stamping and beating, for a long time, the fibres separated by machinery; but with an eye to the market price, too much hand labour was required. Even chemically they could not succeed in removing from the bark the viscid matter, which soon becomes hard, without doing damage to the strength of the fibre. The separation of fibre from the dry stem they found to be easier and more profitable. The only objections to the dry method, are that the resulting fibre is not completely white, and that artificial drying and bleaching would be required during the greater part of the year. The offer of the Indian Government has brought out many competitors, and various descriptions and qualities of machines were invented, but none has yet thoroughly answered the object in view. The repeated efforts made are, however, steps in the right direction. The Cosmos Fibre Company, of Dusseldorf, invented in 1881 a machine said to be capable of cleansing the bark of all resinous and woody matter. The Acclimatisation Society of France has recently granted the large gold medal, placed at its disposal by the Minister of Agriculture, to M. Berthel, for an improved machine which strips and prepares the ramie fibre on the spot in the green state, and also operates successfully on other textiles, as agave, jute, &c. I have not met, however, with any description of the machine. The Jamaica Institute has offered this year a prize of £50 for one cwt. of clean marketable fibre, produced by machinery, in the island from rhea, pinguin aloe, or fourcroya. A preference will be given to such samples, as are produced without chemical maceration, and are proved by brokers' reports to be suitable for and acceptable in the English and American markets.

Fast Colours for Hosiery.

Great difficulty having heretofore been experienced by manufacturers in securing a fast baby blue on loose cotton for hosiery purposes, we are enabled through the kindness of Dr. Frank, publisher of the *Textile Colourist*, to present to our readers the annexed receipt, which, if followed out in accordance with the directions given, will produce a perfectly fast colour:—

FAST BLUE ON COTTON.

100 lbs. Cotton (well teased).
Boil up 6 lbs. Sumac.
Enter Cotton for 1 hour; rake well, lift and drain.
Enter second bath of
3 lbs. Oxy-muriate of Antimony.
Rake well for half hour; wash out in two waters, and then enter dye bath, containing
2½ ozs. Fast Blue, No. 67 } F. Bredt & Co., New York and Phila.
at 90° F, rake well, while raising temperature to 180° F. Cool off, wash, whizz and dry.

The Weaving of Tapestry, Table Covers and Bed-Mats at Paisley.

Referring to the almost entire change in the weaving trade of Paisley during the past few years a writer in the *Glasgow News*, says :—

Although the Paisley weaving trade, which in its day has passed through many phases and has seen many ups and downs, may be said to have touched the lowest water-mark of industrial existence, it is not dead by any means. "Ichabod" is not yet to be scrawled over the famous old signs in the immortal "Causeyside," for the glory has not departed. One cannot but be struck with the fact that in the great changes which have taken place within the last half-century in fashion or public taste, Paisley has been found equal to take Time, as it were, by the forelock, and lead the van. Whether or not her merchants and manufacturers of the present day will be equal to grapple with the radical revolution which has come over the trade within the last few years remains to be seen, although we certainly hope for much. One thing is certain—the work of restoring the weaving industry to its pristine health and vigour will be no easy task, as a few hard facts will show. From about the year 1878 must be dated the entirely new departure in the Paisley weaving trade. About this period several of the larger and more enterprising firms turned their attention to the manufacture of tapestry curtains. For this kind of work, as the result proved, the grand old Jacquard loom has been easily made adaptable, and the trade is now rapidly growing in the hands of the great Paisley weaving firms still left, and destined to revive the glory of the trade in the good old town. At the present time there are about a dozen firms engaged in this trade, which, although only in its infancy, is showing great vitality. We need hardly say at the same time that the beauty of workmanship, artistic design, and disposition of colours, which have always been a feature of Paisley-woven fabrics, peculiarly characterise the tapestry products. Anyone can judge for himself of the rare charm of these goods by inspecting them in the windows of the great city drapery warehouses. The only drawback to the full and free development of this trade is a purely fiscal one. Whilst our ports are freely thrown open to foreign exporters, the home-made goods have a difficulty in competing with them. The French are of course our greatest opponents in this way, and yet we can to a large extent, more particularly in the commoner classes of goods, beat them hollow. As for America, the duty, in some cases almost totally prohibitory, practically excludes our goods from the market. All this is of course very discouraging; but "nil desperandum" has been the business motto of the Paisley manufacturers, and they will assuredly triumph over their present troubles. Tapestry curtains as at present manufactured in Paisley may be divided into three classes—1st, those made of the lowest class of cotton; 2nd, those made of cotton, noil silk, wool, worsted, jute, and linen; 3rd, rich silks. The trade prices vary from 10s. a pair to £10, but the bulk of the trade is done in goods of the value of 18s. to 63s. per pair. In Paisley the weavers engaged in this work make easily from 18s. to 20s. per week. The other great development of the weaving trade has been in the weaving of the heavy cotton and wool, Jacquard bed mats, and table-covers. These range in size from 6 feet by 6 and from 9 feet 7½, and in price they range from 5s. 4d. each to 17s. 3d. trade price. A great many of the beautiful and most "cozy" bedcovers are woven in Strathaven, Lochwinnoch, Beith, and Largs. These fabrics have entirely supeseded the old plan "diced" design of coverlets, and can be made in every conceivable colour, and give scope for great variety of design and richness of ornamentation. Some of them are fringed very prettily with woollen threads of colours, harmonizing with the general tone of the cloth. The weaving-on of these fringes is a separate work, done by girls in the warehouses in Paisley, and of late the aid of a most ingenious sewing machine has been called into requisition. We were glad to hear whilst on our visit to Paisley, from one of the largest and most enterprising firms in this trade, that they had just opened their first account with Canada, and hoped in time to do a large colonial trade. Certainly for comfort, cheapness, and artistic taste, no such bed-covers have ever been produced in this or any other country. We may mention, however, that the weaving trade of Paisley is much hampered by the scarcity of labour. Prosperity has usually come in spurts, and this has prevented the trade of weaver from being attractive to the youth of the town. This want of recruits has placed the manufacturers in a position of much anxiety now that the period of briskness has come; and it is feared they may ultimately have to resort to the Jacquard power-loom. Still, much can yet be said for the enterprise, skill, and taste of the Paisley weaver, who, Phœnix-like, has risen almost from the Ashes of his honoured ancestors of the famous "Causeyside," and is destined to take again a foremost place among the manufacturing princes of Scotland.

The Association of Chambers of Commerce is in communication with the Prime Minister, and is summoning Parliamentary influence in support of the appointment of Standing Committees of the House of Commons, with a view to securing more adequate attention to questions of commercial interest.

An invention by which an equal and regular supply of wool may be delivered to a carding machine has recently been patented by Mr. Ernst Gessner, of Aue, Saxony, Germany. The wool box is straight on the front side, and has within it a vertical endless lifting apron, having teeth, which, as the apron revolves, carry the wool to a revolving beater, by which the larger bunches are driven back, and the remainder is delivered to the distributing cylinder. Between the apron and the feed-rollers is a grated burr box, and immediately over the grating a beater revolves, and between this and the grating the wool is dashed, the beater dislodging all particles of foreign matter, which fall into the burr box below. After the wool passes the grating it is delivered to the lap-roller and wound in an even and uniform lap. Underneath the lap-roll is a toothed roller, by which the wool is pulled off from the lap-roll in even quantities and it is deposited by a revolving brush upon the feed belt of the carding machine.

The Duties on Coloured Cottons in the United States.

A decision materially reducing the duty on cotton goods, says *The Textile Record*, has recently been made by Judge Shipley in New York, which the Treasury Department promulgates in its usually equivocal manner, but which substantially reduces the duty on a large class of coloured cottons. The extent of this reduction is disputed, some claiming that it amounts to 4 or 5 cents. per yard on Turkey-red damask, and many similar goods, the result being that they come in at a low *ad valorem* rate, instead of at the specific duties intended to be imposed. The precise point decided was that in the clause "*on goods of like description or for similar use*" which substantially places all cotton damasks on the basis of "jeans, denims, drillings, bed tickings, ginghams, plaids, cottonades, pantaloon stuffs, and goods of like description and for similar use," the phrase first cited is to be considered as the *description* and not as the *use* to guide the classification. If not included in the designated category, they fall into the class of goods charged with *ad valorem* rates of duty, so it is claimed. The object to open the door to large re-liquidations and refunds is apparent in all the action taken by the Department here, as in the knit goods case. It is not yet made known how far the reduction will extend, but it is already sufficiently obstructive to check the manufacture of Turkey-reds and damasks of this class, as probably it will of some other classes. It is not necessary for a commission to undertake the reduction of duties when the officers of the Treasury Department work so effectively in altering the law as they have done in this and many other cases.

The Use and Abuse of Double Cloths.

THE opening lecture in connection with the evening classes in the Yorkshire College was delivered by Mr. Beaumont on the above subject. The lecturer commenced by giving an analysis of two samples of cloths, for use as representative of the entire range of backed fabrics. He showed that in cloths backed with weft only the warp could not be divided, and that such a cloth was double in the weft and single in the warp. On the other hand, in cloth backed with warp only the results were reversed—the weft was indivisible, and the cloth was double in the warp and single in the weft. Referring to the manufacture of what were properly called "reversibles," he said they were made in Leeds thirty-four years ago. They must admit that in those days there were men whose knowledge of textile manufactures were such as enabled them not only to select and appropriate the right kinds of raw material, but to give the same permanent colour and suitable wear, and to finish the cloth on both sides so as to give it its proper handle even at the present day. The term "reversible" had then a distinct meaning. The cloth had to be equal in quality, wear, and finish on both sides, and of different colours, and by this arrangement the ingenious tailor was enabled to make a garment in such a way that its wearer could go to business in it in the morning, and in the evening, by turning it, could make it form part of his evening costume. In a double cloth there must be two distinct weaves, each having its warp threads and weft picks. The arrangement of the two warps might be either thread and thread, two and one, or even three and one. The picking of the

weft might correspond with the arrangement of warp threads, but this was not always essential, as the designer might alter the weft according to the class of goods or the figure to be attained. It was not needful to have two sizes of warp and weft thread, nor that one weft should remain solely on the face while the other was constantly at the back. The two weaves were in some cases allowed to change their positions according to the purposes of the designer, or the weave which in one place formed the face might be altered into a position to form the back, and that which had been employed in producing the back might be made to do duty as the face. One condition might always be insisted upon—a careful analysis must show each weave composed of its own warp and weft threads, and each weave as decided in character as if produced on separate looms. The double weave was applicable to the production of low ordinary carpet, and fine carriage rugs. The latter was a branch in which improvement was absolutely needed if the English were to keep abreast of their Australian competitors. The double weave figured to advantage in the production of shawls, and by it the designer might obtain the most fantastic objects possible. Mantle cloths, woollen trouserings, or suitings were likewise branches in which the "double plain" cloth played a conspicuous part. In 1849 this weave held a high place in the estimation of the manufacturers of fancy woollens; but in 1853 or 1855 the make reached its climax. Such was its suitability to this class of goods that it was rarely out even of the Yorkshire markets for more than one or two seasons together; while in almost all the fancy trouserings made every winter and summer for consumption in the West of England it could be traced. The manufacturers of Sedan and Rouen also never allowed this favourite weave to die. Such were its capabilities that the largest figured effects, as well as the smallest and neatest styles, could be obtained. Mr. Beaumont also called attention to another kind of double weave, equally as suitable for trouserings, mantles, and vestings, which was woven both in warp and weft, two threads of small and one of thick yarn, thus offering the designer the chance of making use of stout or low-priced yarn for one part of the cloth, and causing the smaller or finer to be used more economically. A house who introduced this make was said to have made large profits out of it. The production was revived eight years ago by French makers in mantle cloths, which were made something after this fashion: Warp, cotton and mohair; weft, woollen and mohair; the cotton warp forming in all cases, along with the woollen weft, the ground of the cloth. Many useful weaves were employed in the production of coatings and trouserings, the yarns for which might be either wool or worsted, or a combination of both. The warp was sometimes all wool, but of two or more colours; one or more forming the face, and generally one colour for the back. If this weave were to be discarded, the production of a large amount of useful and ornamental goods would be impossible at the prices at which the goods made on this principle were sold. Besides, double-weave cloths were softer and loftier in the hand than single-made cloths in proportion to the amount of material employed; and a class of figuring was obtainable fast on both sides, which could not be secured by single weaves. A heavier cloth per yard, compared with the value of the material, was also obtainable. However much felting was given to a double weave, it was next to impossible to force the threads and wool fibres to alter position or amalgamate or interlock with one another, either in the same way or to the same extent as in a single-made fabric, and it was this fact which gave it a free and porous handle. The abuse of double cloths arose from the use of yarns of unsuitable size, and an imperfect tying of the two fabrics. How were the abuses to be remedied? If they might not be removed, they might perhaps be minimized. In order to effect a change, manufacturers and designers must obtain a more thorough knowledge of the weaves employed, and the effects they would produce in the woven fabric. More proficiency in the art of binding one weave with another was indispensable if good, substantial, evenly-tied cloth were to be produced. Nothing must be left to right itself, and there must be no chance about the work of a designer; in fact, if we were to produce original patterns, copying and imitating the productions of others ought to be discountenanced by all interested in textile trades.

The Reviving of Irish Industries.

Mr. Edward M'Mahon, who was the first to make a stir for the revival of Irish manufactures, has given form and substance to his patriotic aspirations by starting a hat factory. The factory occupies an area of a quarter of an acre. One house is filled exclusively with trophies of the chase—thousands of rabbit skins. Mr. M'Mahon has introduced the latest inventions to economise labour. Estimating his full number of hands at twenty women and thirty men, his output of hats would be forty dozen a day. Forty years ago there were 1,000 operative hatters in the city; now there are not 100. Such has been the decadence of Irish manufacture that Mr. M'Mahon, who would keep every Irishman and Irishwoman at home, even in the workhouse, hoping for better times, has been compelled to employ some English hands, trusting, of course, that an increase of the population and the education of the Irish youth in the handicraft of hat making may soon enable him to dispense with foreign labour.—Commenting upon the decision arrived at by the Irish Exhibition Company to start an Irish Industrial Company, the *Freeman's Journal* says that there is not the shadow of a doubt that if the existing industries got, in Ireland, England, United States, and the Colonies, sufficient advertisement, and the genuineness of Irish manufactures were guaranteed, the demand for existing Irish manufactures would be quadrupled. When a good scheme is laid before the country, and fair security offered, the savings of the people, amounting to millions in the year, will be chiefly devoted to the encouragement of Irish industries.

SCIENTIFIC AND ART NOTES.

A series of lectures is to be started at the Royal Polytechnic Institution for the benefit of students of the City and Guilds of London Institute. Mr. E. Howard Farmer is the lecturer, and this opportunity may be recommended to those who wish to perfect themselves in their profession.

* * * *

Bichromate of Potash, it is well known, is very injurious to the hands especially if the skin is at all broken; a solution of gutta-percha applied over the sore, forming an artificial skin, has the effect of preventing much pain in such cases.

* * * *

An automatic embroidering machine has been invented by a young workman at St. Gall (Switzerland). The machine is said to be of simple construction, and to be capable of executing any design. We should think it would be difficult to beat some of the embroidering machines already in the market.

* * * *

The London Chamber of Commerce will issue a special supplement (10,000 copies) of the *Chamber of Commerce Journal* on the 14th of November next, containing an original paper by Mr. Archibald R. Colquhoun, F.R.G.S. (of the recent Colquhoun Expedition), on the "Prospects of Trade Extension between Burmah and South-West China."

* * * *

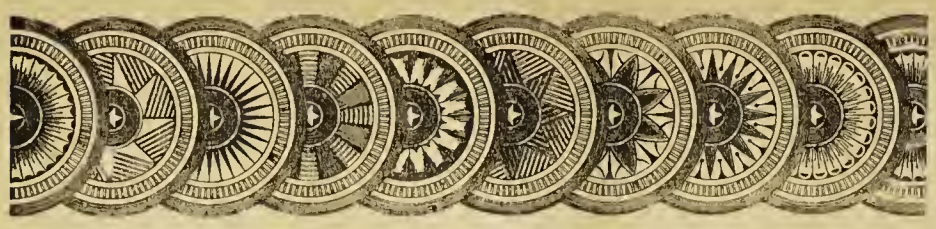
To make a good blue marking ink for white goods, Dorvault recommends the following:—Crystallized nitrate of silver, 1 drachm; water of ammonia, 3 drachms; crystallized carbonate of soda, 1 drachm; powdered gum arabic, 1½ drachms; sulphate of copper, 30 grains; distilled water, 4 drachms. Dissolve the silver salt in the ammonia; dissolve the carbonate of soda, gum arabic and sulphate of copper in the distilled water, and mix the two solutions together.

* * * *

M. Ruimet des Taillis, writing in the *Chronique de la Société d'Acclimatation*, states that, by feeding silkworms on vine leaves, he has obtained cocoons of a magnificent red, and by employing lettuce, others of a deep emerald green. M. Delidon de Saint Gilles, of Vendée, has obtained silk of a beautiful yellow, other samples of a fine green, and others again of a violet, by feeding the silkworms on lettuce, or on white nettle. He points out that the silkworms must be fed on mulberry leaves when young, and supplied with the vine, lettuce, or nettle leaves during the last twenty days of the larva stage of their life.

* * * *

For the last seven years the officers of the French Navy have been testing the efficacy of zinc leaves in neutralising the effect of fatty acids in steam boilers. Commandant Frené has made an official report. The zinc inside and the iron of the boiler constitute a voltaic element which decomposes the water and liberates oxygen and hydrogen. The oxygen forms oxide of zinc, which combines with the fatty acids mingled with the feed water, thus forming "soaps" of zinc, which, coating the tubes of the boilers, prevent the adhesion of the salts left by evaporation.



ORIGINAL DESIGNS.

On our first plate we offer a suggestion for a Linen Damask Table-Cover, which in working should be produced on a rather larger scale—say 9 inches. This pattern can also be worked as a Tapestry Table-Cover, and the body of the design may be used in the formation of a Dado for a Curtain. It is designed by Mr. R. T. Lord, 3, Gerrard Street, Halifax.

* * * *

The second plate consists of four Borders suitable for Dhooties, designed by S. Garforth, Ovenden, near Halifax If woven in three colours—Black, Red and Yellow, they will make very effective patterns.

* * * *

A Cretonne design is the subject of the third plate. This is also from the pencil of Mr. R. T. Lord.

* * * *

*** We beg to inform manufacturers and others that adaptations of designs, published in the "Journal of Fabrics and Textile Industries," can be made at the Office by experienced Designers, and that Original Designs can also be furnished at moderate charges.

* * * *

Numerous inquiries having been made for back numbers of the Journal, we beg to inform our readers that all the numbers from the commencement to July are out of print. We have however reprinted our designs and have a stock of copies on hand, which we shall be happy to supply in the order in which they were originally published, at 6d. per set, each set representing one month's issue.

MONTHLY TRADE REPORTS.

Wool.—Since the close of the sales in London on the 2nd of last month, the market has experienced a fair inquiry for many classes of wools, but chiefly for Australian scoured; moderate purchases have been made at a slight advance in prices. The total quantity of wool for the next sales, which will commence on the 21st inst., will probably amount to 140,000 bales—30,000 bales Cape and 110,000 bales Australian. Trade in Bradford and Halifax has been of a discouraging nature, owing to numerous failures having taken place, thus causing a feeling of suspicion to pervade the market. Prices however, have kept moderately firm, and at the time we write a rather better feeling exists. In the yarn and piece trades business has been of a quiet character. Orders that are placed are for insignificant quantities. Prices show little alteration. In the Scotch districts a moderate business has been passing in wools with prices unaltered.

Cotton.—The raw material has steadily declined in price during the month, which no doubt will cause an improvement in business to take place. The demand has been of a dragging nature, buyers only purchasing to satisfy their present requirements. Yarns, following the raw material, have also declined in value, with the exception of those made from Egyptian cotton. Cloths have been quiet and easier in value.

Woollen.—Trade during the whole month has remained in a healthy condition. Manufacturers of the better and medium classes of worsted coatings have been, in many instances, working overtime. A good business has been passing in Meltons of various shades and qualities. The demand for tweeds has fallen off slightly, but yet a fair trade is still being done in this branch. The demand for the Continent has, on the whole, been good, and for the United States and Canada a more than average business has been done. Prices for all classes keep firm, with a slightly hardening tendency.

Linen.—In the Yorkshire districts a slight improvement in business has been noted for most descriptions of goods, with prices on a par with last month's. In the Scotch districts the factories are running full time, and the demand is considered satisfactory. The home trade is rather below, than above, the average, but the export business, especially that to the United States, keeps up well, and shows signs of further improvement. Prices are generally firm. An improvement has been experienced in the demand for hemp, jute, flax, &c., and prices are firm with a slight tendency to rise.

Carpets.—Business has improved but little during the month. A slight improvement has taken place in the demand for tapestries, but prices are so very low as to leave but a small margin for profit. This is very disheartening to tapestry manufacturers. For the better class of carpets spring orders are now beginning to come in, but not as quickly as at this time last year. Prices keep firm. A few firms are still running short time. The raw materials have been a little firmer, worsted yarns showing some improvement in price, owing to the increased value of wools.

Lace.—A state of inactivity has characterised the markets during the past month. What few orders have been given out have been very small, and the business passing is below the average. In curtain goods an improved demand took place towards the end of last month, and a hopeful feeling pervades this branch of the trade. In the silk departments orders are few, and the demand for cotton goods is generally limited, with the exception of Valenciennes, loop and torchen laces, which are in fair request. Although the demand on the whole is inactive, prices are not much affected, but keep moderately firm.

The Twist in Woollen Yarns.

In speaking of the twisting of woollen yarns to be used in the making of cloth in the woollen districts of the United States, the *Boston Journal of Commerce* says—"The matter of twist in yarns does not receive that attention from our manufacturers that its importance demands. We live in too fast an age, and production seems to be of more importance than accuracy. If we have a pattern to make we too often look around, and if we have on hand yarn of about the size we want we are apt to use it and say, 'That is near enough.' But it is not near enough; no yarn is near enough that is not just right; every pattern should have the yarn made especially for it. It should not only be just right in size, but the twist should be just right for the weaving it is to be used in. This matter receives much more attention on the other side of the Atlantic, where there is more skilled labour, consequently more competition in skill and more useful ideas developed, and the manufacturer is the gainer by all of this. In the earlier stages of manufacturing in this country, when broadcloths and doeskins were persistently attempted to be made, the warp and filling twists were made different; that is, warp was to the right and filling to the left. As most of our superintendents were from England at that time, this was no doubt a custom they brought with them, and from that time until the present day most of our single yarns have been so made unless for some special object the twist has been changed."

For broadcloth, doeskin, or any plain faced fabric that is to receive much felting in the finishing process, the twists should be opposite; that is, if the warp is twisted to the right the filling should be twisted to the left, or vice versa. If made in this way, and no more twist used than is actually necessary, the thready appearance of the face will soon be lost during the fulling process.

If right and left twist yarn is used on fancy cassimere, whether of one or more colours, when the figure is desired to be distinct in outline, disappointment will follow; the result will be a face similar to the broadcloth, soft, close, and smooth, but at the expense of distinctness of outline in the figure.

If a sharp distinct figure is desired, whether of one colour or of a fancy figure of two or more colours, the twist should be the same in warp and filling. If there is any tendency to a twill in the figure, whether to the right or left, the twist should be made accordingly, and a sharper, more distinct figure will be the result.

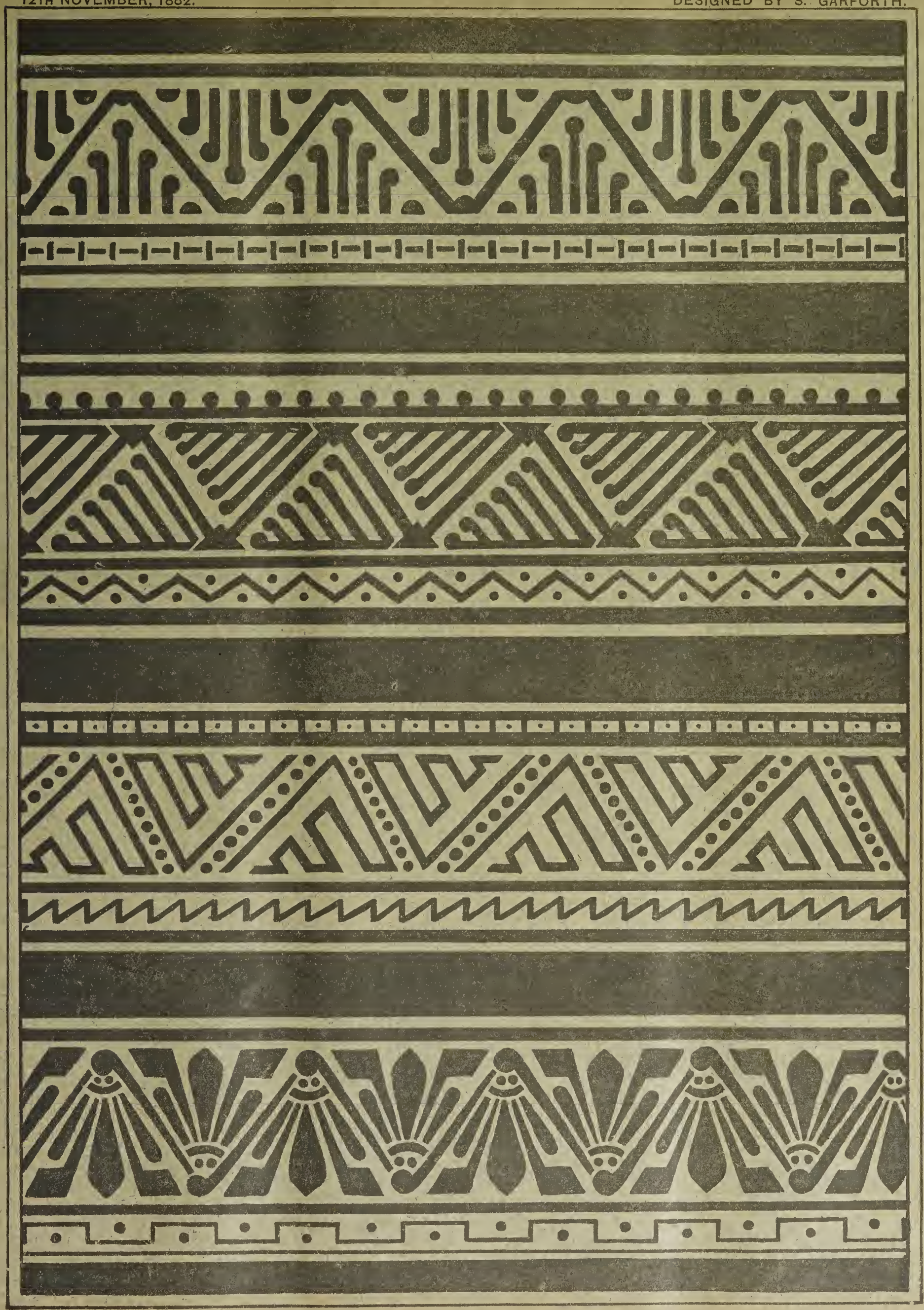
THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH NOVEMBER, 1882.

DESIGNED BY R. T. LORD.

LINEN TABLE-COVER.

12TH NOVEMBER, 1882. DESIGNED BY S. GARFORTH.



BORDERS FOR DHOOTIES.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH NOVEMBER, 1882.

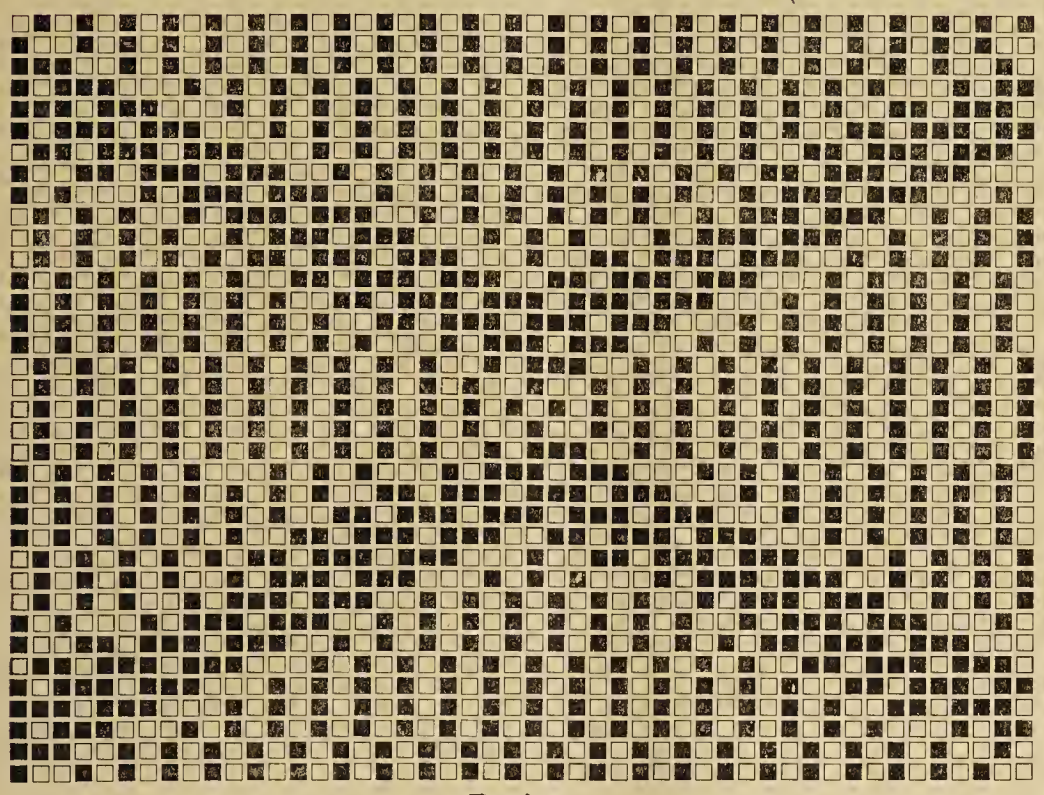
DESIGNED BY R. T. LORD.

CRETONNE.

ORIGINAL DESIGNS

Worsted Coatings.

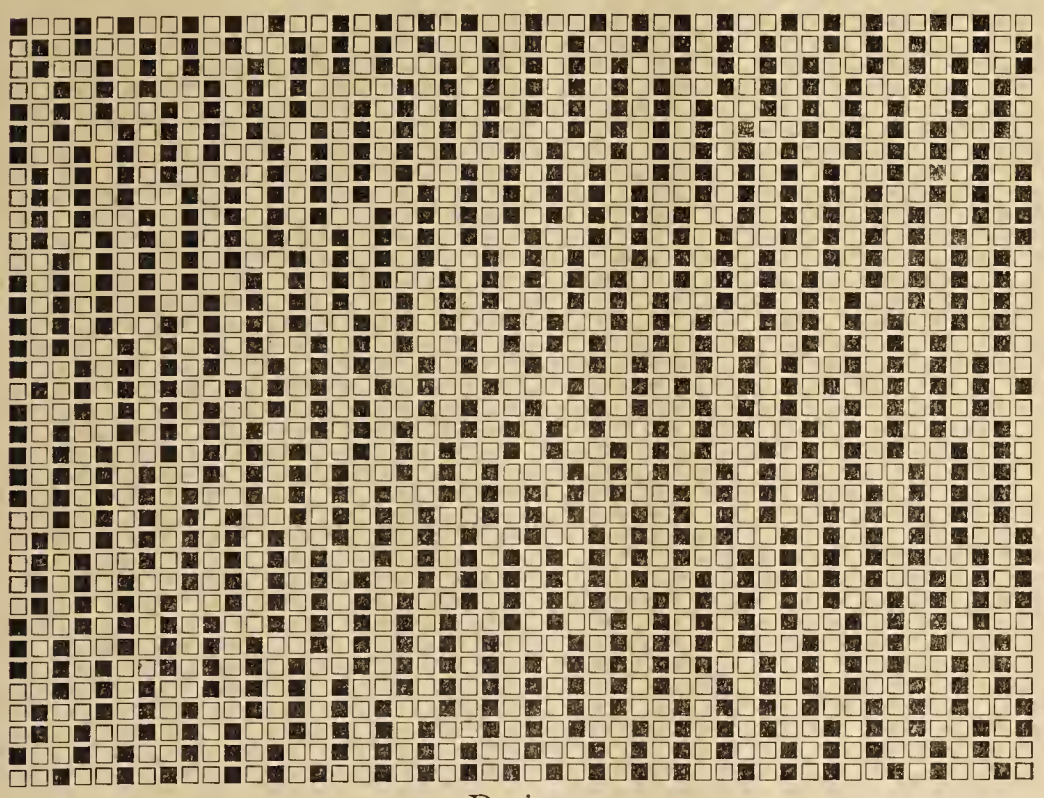
No. 18.



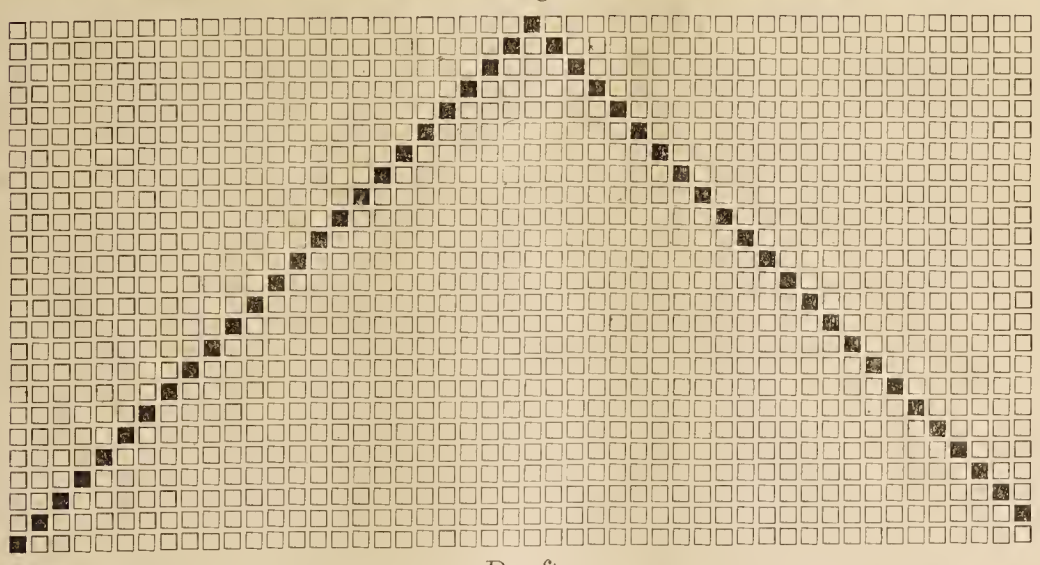
Design.

No 18 is a design for a Corded Diamond Worsted Coating, and as it will not weave with fewer than 37 shafts, the draft is omitted.

No. 19.



Design.

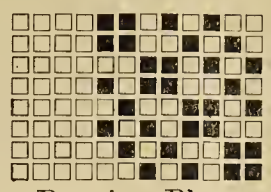


Draft.

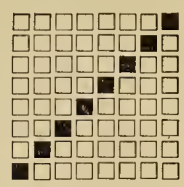
No 19 is a graduated Diamond Corkscrew Design for a Worsted Coating, and is a 48-end pattern drafted to weave with 25 shafts. The first 25 ends of the design furnish the Pegging Plan.

Tweed for Suitings.

No. 20.



Pegging Plan.



Draft.

Begin with 2 Blue.

Warp : 2 threads Medium Blue Twist.
2 ,, Drab Twist.
2 ,, Medium Blue Twist.
2 ,, Orange and Black Twist.

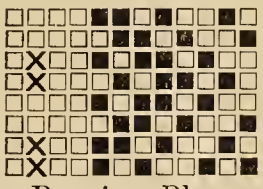
8 ends in a pattern.

Warp Yarns : All to be twisted from 6144 yards woollen with 16 turns in an inch, being when twisted 3072 yards.

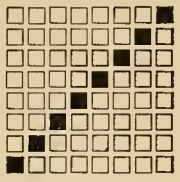
Weft : All Black Woollen single 3072 yards to the lb.
All Dark Brown ,, ,, ,,

Reed 13 : 2 threads in a dent.
28 picks per inch.
68 inches wide in loom.
56 inches wide finished.
Clear finish.

No. 21.



Pegging Plan.



Draft.

1452 threads in the warp.

Warp : All Light Grey single 2560 yards to the lb.

Warp Yarns : Light Grey single 2560 yards ,, ,,

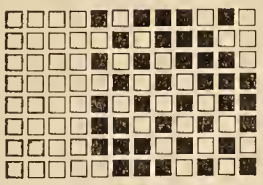
Weft : All Black single 2560 yards.
All White ,, ,, ,,

Also : 2 picks White and 2 picks Black.
2 ,, White ,, 2 ,, Brown.
2 ,, White ,, 2 ,, Blue.
2 ,, White ,, 2 ,, Olive.

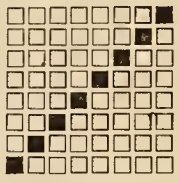
Weave the White weft in the sheds marked x

Reed 11 : 2 threads per dent.
24 picks per inch.
66 inches wide in loom.
56 inches wide finished.
Clear finish.

No. 22.



Pegging Plan.



Draft.

Begin with 3 Blue.

Warp : 3 threads Medium Blue Twist.
1 ,, Orange and Black Twist.
3 ,, Brown Twist.
1 ,, Light Green and Black Twist.
3 ,, Olive Twist.
1 ,, Crimson and Black Twist.

12
12 the above repeated.

24 ends in a pattern, 3 times over the draft.

Warp Yarns : All to be twisted from 6144 yards Woollen with 16 turns in an inch, being when twisted 3072 yards.

Weft : 3 picks Black single 3072 yards to the lb.
1 ,, { 1 Crimson 6144 / 1 Black 6144 } 3072 yard when twisted.

Reed 13 : 2 threads in a dent.
28 picks per inch.
68 inches wide in loom.
56 inches wide finished.
Clear finish.

Industrial Exhibition at Halifax.

The Halifax Industrial Exhibition, an announcement of which was made in our columns a short time ago, was opened on the 11th ultimo, and has proved a success in every respect. Great credit is due to the committee and especially to the honorary secretary, Mr. A. W. Briggs, for the efficient manner in which the arrangements have been made and carried out to such a successful issue. To give a description of all the displays would be out of our province as a textile paper, we therefore only notice a few of those which may be of interest to our readers generally. The exhibits were mostly those of local firms and may be given as follows:—

Mr. CHARLES GALL, MILNER STREET WORKS, HANSON LANE, HALIFAX, exhibited his improved patent self-acting mercurial air valve for steam boilers and other furnaces. The consumption of smoke in manufacturing districts is now rigidly enforced by the local authorities if they do their duty, and although large numbers of firms have endeavoured, by putting in appliances for the consumption of smoke to meet the requirements of the authorities, a great many have failed, the mechanism of the consumer having proved inefficient through some fault in its construction. Mr. Gall claims to have produced, in his smoke preventor, an apparatus so simple in its construction that it may be applied to a boiler in a few hours, and may be managed, when in operation, by a labourer or unskilled workman. The appliance is undoubtedly worth the consideration of users of smoke preventors. We may add that Mr. Gall has been awarded no fewer than 27 silver medals at various exhibitions since he introduced his invention.

Mr. F. HORTON, MILL FURNISHER, and INDIA RUBBER MERCHANT, GEORGE STREET, HALIFAX, exhibited a large assortment of india rubber goods, cotton sail-cloth, beltings, valves, joints, engine packings and general mill furnishings, all of a high class quality, and also some capital specimens of split drums from 9 in. to 40 in. diameter, one of which was at work on a part of the shafting in the machinery department. In addition to the above he showed Marchant's self adjusting steam and water tap, which is very durable and is simple in construction, and should prove a great acquisition to manufacturers, &c. Mr. Horton also shows Marchant's patent propeller lubricator, and judging by the number of firms that already have it in use, its value must have been well tested and acknowledged. The inventor, having devoted much time and money to the question of lubrication, claims to have succeeded in producing a lubricator, which has been proved by actual tests to be capable of performing its work to the satisfaction of the most exacting, and which will enable those adopting it to utilize the resources at their command to very great advantage to themselves. One of the lubricators was working on the engine used for driving the machinery and it worked admirably.

Messrs. JAMES STOTT and Co., VERNON WORKS, OLDHAM, exhibited their "Stott" patent improved self-acting gas valve or governor. The invention which is now well known, both at home and abroad, has for its object the over-pressure and the consequent waste therefrom of gas. A description of the mechanism would not do justice to the governor unless it was illustrated by a diagram, this we are unable to give, it must therefore suffice for us to say that any excessive pressure of gas acts on an inverted cup, sealed in an annular trough filled with quicksilver. To the centre of the inverted cup is attached a simple spindle and half ball valve, closed by being raised against the brass seating, a high pressure raising the inverted cup, closes the valve while a low pressure allows it to fall, thus opening it; for instance say 50 out of 100 lights be turned off, there will be a corresponding increase of pressure on the inverted cup, raising and thereby closing the valve partially, so that for every light turned off or on, or any increase or decrease in street mains, there is a corresponding opening or closing of the valve in the governor, the pressure at the burner thus being the same under any circumstances, the result being a saving of from 10 to 30 per cent., varying according to the pressure at which the gas is supplied to the consumers. In addition to effecting such a saving in gas, a better light is guaranteed by the regulator simply reducing and maintaining a uniform pressure of gas on the distributing mains throughout the building, so that no more gas is forced through the orifice of the burner than can be perfectly consumed, thereby giving the highest degree of illumination possible for the amount of gas used.

Mr. REDMAN, ARCHER STREET, HALIFAX, exhibited a four geared drilling machine, and a bench drill, both of which were good examples of well made tools. The four geared drilling machine is made with improved frame, and will drill 9 in. deep; takes in 28 in. diameter; steel spindle $2\frac{1}{8}$ in. diameter; takes in from spindle to bed, 3 ft. 7 in.; bevel gear $\frac{3}{4}$ in. pitch; $1\frac{7}{8}$ in. across tooth. The head screw is of steel; spur gear $\frac{3}{4}$ in. pitch; $2\frac{3}{8}$ in. across tooth; cones: largest speed 9 in. diameter; smallest $4\frac{1}{4}$ in. diameter, $2\frac{1}{4}$ in. broad; table 22 in. diameter; and pillar 6 in. diameter. The weight of this machine is 15 cwts. Regarding the bench drill we will only mention that Mr. Redman has turned out no fewer than 250 during the last two years. The high quality of both material and workmanship reflects great credit on the maker when the lowness of price quoted for them is taken into consideration.

Mr. R. P. STAFFORD, KING CROSS STREET, HALIFAX, had perhaps the most attractive stand in the exhibition. It contained almost every requisite in metal for house and mill furnishing. We shall however only mention those articles which are likely to interest manufacturers, and amongst these were found water hydrants, and stand pipes with double and single branches, of first class workmanship and high finish. Gun metal cups and wheel valves, sluice valves having a through way when opened, water gauges, whistles, and delivery pipes. There were also some good specimens of fire cocks for the interiors of mills or for staircases. Timdar's pneumatic bells for signalling also occupied a portion of the stand, as did a model of Boyle's air pump ventilator, for factories and sheds, for which Mr Stafford is agent. The whole of the exhibits were of good quality, and we were informed that none of them had been got up for the occasion, as is too often the case with artilces found in Industrial Exhibitions.

Messrs. E. FOSTER and SON, BRASSFOUNDERS, SQUARE ROAD, HALIFAX, exhibited a large variety of brass work, including some excellent specimens of mill furnishings and fire-brigade appliances. This firm is so well known throughout the United Kingdom for the great merit of its manufactures that it is hardly necessary for us to dilate on their unexceptional excellence. Their display was undoubtedly one of the leading features of the exhibitlon and it showed great enterprise on the part of the firm.

Mr. ALFRED YATES, BLACKWALL WORKS, HALIFAX, showed a 3-horse and a 1-horse velomotor. The first-named was used for driving the machinery in the exhibition and proved a centre of attraction. We have previously drawn attention to this simple and cheap steam engine, so will not enter into full particulars of it on this occasion. Mr. Yates also showed a bench drilling machine designed for working either by hand or power. This drill takes 17 in. diameter, bores $5\frac{1}{2}$ in. deep. It had four speed cones and fast and loose pulleys. It was altogether a good machine and would prove useful for mill repairing.

Mr. GEORGE BINNS, ARCHER STREET MILLS, HALIFAX, showed a case containing specimens of machine wool combs, which were well worthy the attention of users of these specialities. The whole of the combs exhibited were highly finished, and appeared well made and substantial articles, reflecting great credit upon the maker. The case contained a great variety of combs, the most noticeable being a small circle for Noble's machine, with drawn brass rim for strong wools. A sample of a fine circle comb for fine wools also for Noble's machine; samples of felling engine combs and strong combs made with drawn brass backs; a long porcupine, the tube of which was made of drawn brass; carrying combs and curved gills for Lister's machines, drawing and finishing gills for wool and silk, all of which were made with drawn brass bottoms; and samples of drawn and cast brass, which showed the difference in the two metals in making machine wool combs. We have every confidence in saying that Mr. Binns does good work and is prompt with all orders entrusted to him.

Mr. PRATT, WADE STREET, HALIFAX, showed a card-setting machine, which was at work setting tinned wire cards, specially adapted for use on damp wool, &c.

Messrs. FLEMING, SON and CO., WEST GROVE MILLS, HALIFAX, exhibited leather beltings of various sizes, &c., similar to those we noticed in our last issue, and which were shown at the Bradford exhibition.

Messrs. SCARBOROUGH BROS., HALIFAX, showed a circular box loom at work on dress goods of various kinds. As stated above the exhibition was a great success, and we congratulate the committee on bringing the affair to such a successful issue.

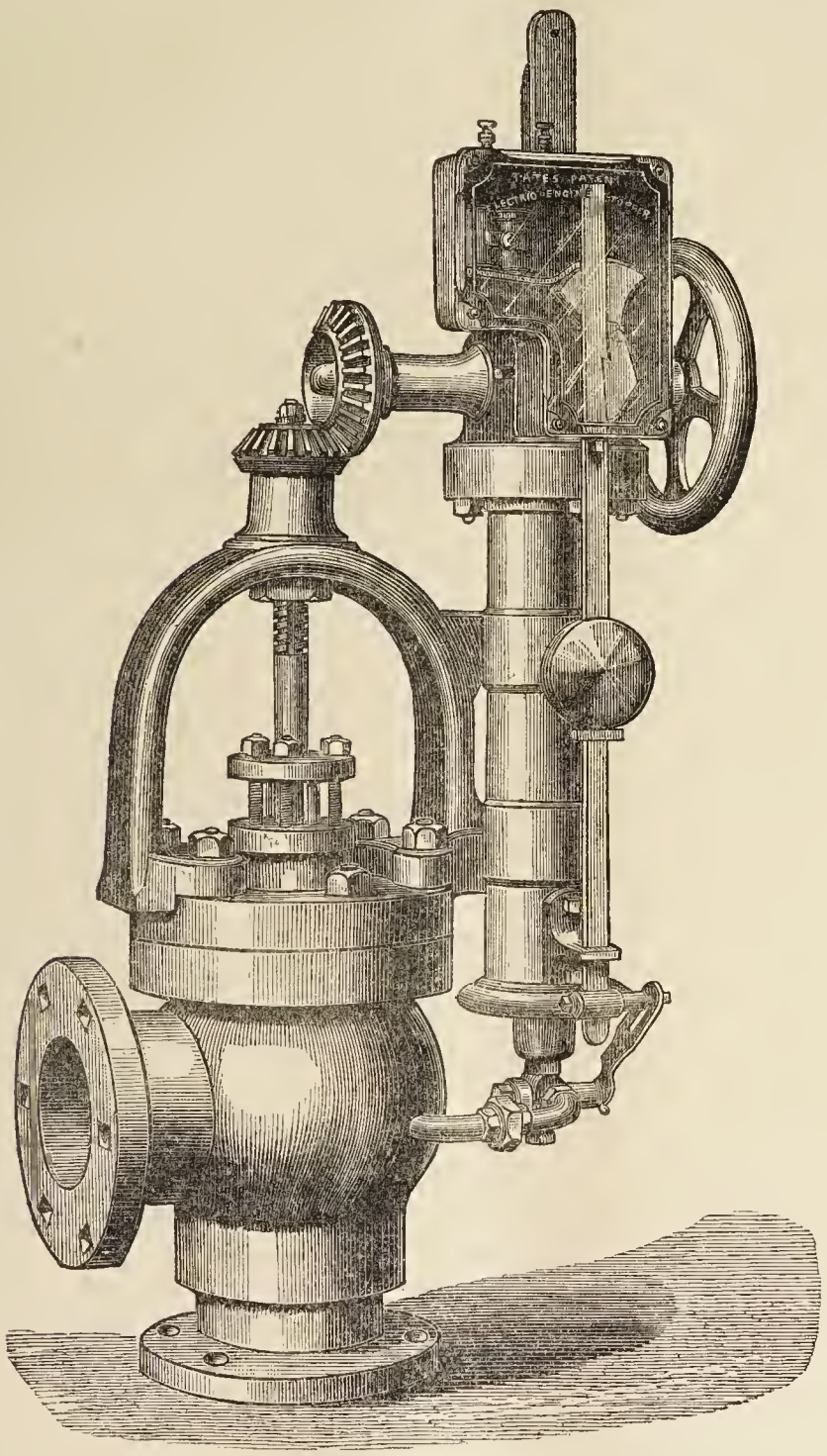
A New Illuminating Gas.

A discovery has been made of a new illuminating metallic gas, which, to those who use coal gas in large quantities, must prove a great boon, more especially to proprietors of factories, &c., in country districts, who have to manufacture coal gas for their own use. Mr. John Dixon, who for some years has been perfecting the invention, has patented the process in nearly every country in the world where the gas will be of benefit, and a limited liability company has been formed with a large company to work the patent. The first works have been completed in Liverpool, and experiments and tests of a crucial order have been made of the power of the new illuminating gas with a result in the highest degree satisfactory. The inventor claims for his patent the production of gas by the decomposition of the component parts or constituents of metals, earths, acids, carbons, &c., the dissolution of the substance being caused by heat. It has long been known that certain chemical substances, when strongly heated, produce flames of peculiar colours, which when blended produce a strong white light; this knowledge the inventor has utilized, and has produced an apparatus capable of manufacturing and stoving a gas, the result of the decomposition of the above named chemicals. In the manufacture of the gas, retorts and other apparatus identical with those in use are employed when manufactured, it may then be conveyed through the mains as at present. The gas is of a dry nature and nearly incondensable and is not affected by extreme cold. The inventor is now prepared to manufacture the new illuminating power, which is not only superior in its brilliancy as a light but is vastly cheaper than any other supplied by any person on the face of the globe. Mr. Dixon estimates that, whereas 1000 men will produce a given quantity of coal gas, 3 men under his system will obtain a like quantity of metallic gas, and give a superior light of at least six times its luminosity, and he guarantees to produce it at from one-eight to one-tenth the cost of the lowest rate charged by any gas company in existence. A very important feature, in its consumption is its purity, and the entire absence of any obnoxious smell, vapour or smoke. Another important advantage is the operator is able to recover the vehicle, such as Kerosene, used in the generation of the gas, and afterwards distilling it, to re-use it to generate more gas for consumption. The residue, when discarded for gas purposes may be utilised in the production of aniline colours, &c.

MACHINERY, TOOLS, &c.

Tate's Electric Apparatus for Closing Valves and Stopping Steam Engines.

Particulars of an apparatus for instantly closing valves and stopping steam engines, which was patented a short time age, have been supplied to us. The motion used for the purpose consists of an ordinary Leclanche battery, an electro-magnet and wires leading to any position from which it may be desirable to control the engine, and buttons for completing the circuit. Also a small steam cylinder, piston, and rack and pinion gearing, which actuates the stop valve on the engine. The apparatus, illustration of which is given, is constructed in a compact form, and can be applied to any kind of valve. The space at our disposal will not allow of a full description of the mechanism. In all establishments where motive power is used the apparatus will prove of the greatest advantage. In factories buttons communicating with the electric battery can be placed at convenient distances in every room, which by means of the electro-magnet actuate the valve-closing motion, and in case of any accident through the breaking of belts, machinery, outbreaks of fire, &c., by simply pressing any of the buttons the engine is stopped instantly. By the ordinary system it generally takes



several minutes, especially when an accident takes place in a part a distance from the engine, and often allows sufficient time for the destruction of valuable property, and for danger to life and limb. The buttons, for safety, are protected by covers of glass to prevent their being used except when actually necessary, and each frame on which they are fixed carries a small iron rod suspended by a chain and hook, for the purpose of breaking the glass on an emergency. By a button being placed in the timekeeper's office, the whole of the engines and machinery may be stopped punctually at appointed hours. Any unskilled person at any part of a building can stop an engine when necessary. The apparatus stops an engine on which it is fitted whenever the speed exceeds the ordinary rate by any given number of revolutions, being automatic in this respect. The motion is fixed in connection with the engine and machinery now running at the Bradford Exhibition, and is working satisfactorily. Messrs. H. Walker and Son, Scholes, Cleckheaton, are the sole agents for Yorkshire, and we are sure they will be pleased to furnish full particulars on application.

Steel for the Manufacture of Spindles, Flyers and Fallers.

In the manufacture of spindles, flyers and fallers, &c., for use in the spinning of cotton and worsted, it is really essential, in order to produce an article calculated to stand the wear and tear that is generally entailed on them in the manufacture of yarns and goods from these materials, that they should be made of the finest steel and that practical knowledge should be brought to bear in their production. Some samples of steel, in the various stages of manufacture, and also of spindles, flyers and fallers made from similar steel, are being shown at the Bradford Exhibition. Amongst them may be mentioned some fine specimens of the metal manufactured by Mr. Benjamin Nicholson of the Shoreham Steel Works, Sheffield, specially adapted for the making of spindles, flyers and fallers. We understand that for some years Mr. Nicholson has made the production of steel for the above purposes, a special branch of industry at his works; and such has been his success that nearly all the leading makers of the above necessary articles for the spinning of cotton and worsted use steel of his preparation. The whole of the articles comprised in his display merit the highest commendation; they show an enterprise and skill on the part of the producer, which will undoubtedly stamp him as one of the leaders in this branch of our industries. In addition to the samples named above, a fine assortment of spindles, flyers and fallers, manufactured by Messrs. Prince, Smith and Son, of Keighley, from steel supplied by Mr. Nicholson, is also exhibited. These are of so excellent a quality and workmanship that they speak for themselves, and in actual working must, undoubtedly prove of the greatest utility to the spinner and manufacturer. The case also contains a large assortment of tools of various kinds for use in different trades. These may be classed with the above mentioned articles for the superior style of workmanship. The whole exhibit reflects the greatest credit upon Mr. Nicholson.

New Colours.

The new colours show many faded tapestry shades, and it is the caprice of the season to label these new shades old; thus there is a vieux Sévres, or pale old Sévres blue; vieux rose, which is faded pink; vieux vert, or green with more yellow in it than that lately used. Ficelle shades are seen in variety, and there are natural colours of furs that incline toward ficelle hues, such as the sable and castor beaver. These ficelle and other light-gray brown shades are seen in contrast with every colour, and are particularly stylish with rifle green and with modoré, or golden brown. *Télégraphe* blue, similar to our cadet blue, is named after the blue telegraph paper used in France, and is also better named electric blue. *Chaudron*, or copper red, is the most elegant red shade, but there are also *grenat*, Sultan, poppy, and wine colours. Sfax is a new light terra-cotta colour; there are many other tints, shown of this brownish-red. Besides the electric blue there are also the hussar, chasseur, sapphire, and mid-shipman blue shades that are almost black. Réséda, the green mignonette, is again revived, as is ardoise, argent, acier, and all steel and silver grays. Pale pink shades are shown in the *crevette*, or shrimp-colour, salmon, apricot, and cactus hues, with much shading toward yellow. Alicante is a golden brown, and there are light sandal browns, with darker *feuille morte*, or dead-leaf brown, loutre or felt brown, mordoré and bronze doré, which has a greenish cast.—*American Textile Record.*

Mother-of-Pearl Designs on Tissues.

A method of obtaining mother-of-pearl designs on fabrics of various kinds is the subject of a German patent. By this invention it is guaranteed that the fabric, after having been treated properly, has the exact appearance of mother-of-pearl. The operation is carried out as follows:—A thin layer of caoutchouc is spread over a thin copper plate, on which the design is cut. The cloth is spread over the plate and a hot roller passed over it. By the heat the caoutchouc layer becomes liquid, and by the pressure it adheres to the cloth on which the required design is thus obtained. The cloth is now covered with powdered mother-of-pearl, which is spread evenly by means of a hot roller, and the excess of mother-of-pearl, which does not stick to the cloth is taken away by means of a soft brush. The cloth is now covered with very fine crêpe which has been wetted in gum water, and after drying the crêpe can be made fast on the cloth, so as to protect the mother-of-pearl powder from falling off, whilst owing to its fineness and transparency it does not spoil the brilliance of the powder.

ODDS AND ENDS.

An official report of the United States foreign commerce during the last fiscal year shows that 41 per cent. of the total was with the United Kingdom, while only 15½ per cent. was carried in American vessels.

* * * *

A political economist estimates that the exports from France at the close of 1882, will show an increase of 10·05 per cent., as compared with last year; those from England undergoing an improvement of 7·25 per cent. He bases his calculations, not only upon the Customs returns for the first nine months of the year, but on the general condition of French industry.

* * * *

An experimental jute farm is in operation at Point Coupèe, La., and such success has been met with in its cultivation that a gentleman is now engaged in an effort to raise money to establish a factory in Point Coupée for the manufacture of the fibre into bagging. It is said that some of the jute grown there has attained a height of 10 feet, notwithstanding it was planted after the late high water.

* * * *

An interesting experiment is about to be tried. The New York Silk Exchange is to establish a colony for the cultivation of silk in New Jersey within twenty-five miles of New York city. Six families, composed, with one exception, entirely of women who have been teachers in the public schools, have already expressed their intention of joining the colony, and high ground is to be selected where mulberry trees flourish. The cost of a silk farm, including buildings and equipments, will be from $1,500 to $2,000 each, according to the buildings erected. Double houses will cost families $1,500 each.

* * * *

According to the Buenos Ayres *Standard*, the River Plate countries were never in so prosperous a condition as at present, commercially, agriculturally, and financially. The railway system is being rapidly pushed, and before long the Argentine Republic alone will boast of 5,000 kilometres. European immigration continues at the rate of 2,000 a month, and they all find employment in the colonies or as navvies on the railway extension, "and," says the *Standard*, "there is plenty of employment for many thousands more." Trade of all kinds is active, and the export of maize contiues on a large scale.

* * * *

A new development of Russian progress in Central Asia in spoken of in the Continental press. A company with a paid-up capital of £30,000 to commence with has been established in Moscow for the purpose of developing the cultivation of the cotton plant in that quarter. The company will also undertake the purchase of cotton for third parties, and in a general way do all in its power to make cotton growing a success in the districts chosen for its operations.

* * * *

The *Glasgow Herald* says:—"We have been informed that telegrams have been received in Glasgow stating that all restrictions as to selling alizarine for the whole or any part of next year, have been removed. The turkey-red dyers and calico printers will therefore no longer be under the necessity of reducing the manufacture on account of any contract difficulties with the alizarine makers. We understand that the latter have also intimated that after June next they will reduce their prices, with the view of meeting any competition.

* * * *

The annual consumption of wool in France is estimated to be 200,000,000 kilos, or, roughly speaking, 200.000 tons. No less than two-thirds of this quantity is imported, and it is from foreign sources of supply that the woollen industry of France has drawn the raw material necessary for the notable development of this branch of manufacture during the last half-century. In 1830, when none but native wool was used, the quantity employed was only 40,600 tons

* * * *

An interesting statistical return is published in the Continental press as to the total weight of the silk goods manufactured in Europe during last year, as compared with the quantity produced in 1880. There is an increase in the case of each silk-producing country as follows: France, 11 per cent; Germany, 27 per cent.; Austria, 27 per cent.: Italy, 19 per cent.; Switzerland, 48 per cent.; England, 9 per cent.

* * * *

The figures of Roumanian trade during the last few years show the development indicated in the following tables:—

	Imports. Fr.	Exports. Fr.
1873	97,867,167	157.570,732
1874	122,791,114	134,713,818
1875	100,834,169	144,962,079
1876	165,923,303	235,256,286
1877	335,548,999	141,081,100
1878	306.582,322	217,041,727
1879	254.482,629	238.650,006
1880	255,836,415	218,918,878

NOTICE TO ADVERTISERS.

Advertisements will be inserted at the following rates; (in all cases prepaid): *Twenty words, One Shilling; Sixpence* for each additional *Twelve words* or part of *Twelve*. The address being counted as part of the Advertisement.

Displayed Advertisements according to arrangement.

Miscellaneous.

TO EXPORTERS.—Mr. Edward Coward, of 2, Pekin Buildings, Liverpool, has considerably extended his Shipping Agency Business, and begs to inform Export Manufacturers in the Woollen Cloth, &c., districts, that he will be happy to conduct the shipment of any goods they send through Liverpool on his usual moderate terms, which may be had on application. Every facility for despatching cargo with rapidity and economy.

NEW YORK.—An Englishman, gentleman by birth and education, of good business tact and experience, holding high commercial position in above city, but having much spare time, would undertake the AGENCY of an English manufacturer or export house; or, being thoroughly posted with the American markets and merchandise, especially in the provisions and machinery line, would buy on commission or otherwise. Head quarters, New York. High and responsible references in England and America.—Torrey, 21, Park Place, New York City.

THE GAZETTE.

Adjudications of Bankruptcy.

Thackray William, Albion Street, Morley, near Leeds, commission agent, late Queen Street, Morley, cloth manufacturer and scribbler

Clay Thomas, St. Mary's Street, Albion Mills, West Orchard, and 26, Paradise Street, Coventry, ribbon and trimming manufacturer.

Mills James Green, Church Bank and Richmond Road, both Bradford, stuff merchant.

Johnson William, North End, Croydon, dealer in Berlin wools.

Crossley William Thweat, William Hibbert and Frederick William Dawson, trading as Crossley, Hibbert and Co., Rainow Vale Bleach Works, Rainow and Tib Lane, Manchester, bleachers and finishers.

Liquidations by Arrangement or Composition.

Carter Jeremiah, and Thomas Carter, trading as Jeremiah Carter and Co., late as Jeremiah Carter and Sons, South Lane Mills, Elland, Halifax, woollen manufacturers.

Hawkswell William, trading as John Woodhouse and Co., Wadlands, in Farsley, farmer, and Moorside, Holbeck and Aire Street, both Leeds, woollen manufacturer and merchant.

Hill William Thorpe, trading as William James Hill, New North Road, frilling manufacturer.

Clough Samuel Hemming and Atack Musgrave, School Close, Leeds, dyers.

Kingscott Charles, Cleveland Street, Wolverhampton, tent maker and oil cloth manufacturer.

Lonsdale Peter and Henry Lonsdale, trading as Thomas Bolton and Co., Hall Street, Blackburn, cotton spinners and cloth manufacturers.

Spill George and Horatio Spill, trading as George Spill and Co., Mile-end Road, waterproof clothing manufacturers.

Walker Joseph, Kington, Herefordshire, woolstapler.

Heginbottom James, Dalton Street, Stockfield Road, and Stockfield Mill, both Chadderton, Lancashire, cotton spinner.

Gott James, Clifton View, Prestwich Park, Prestwich, and Fountain Street, Manchester, manufacturer of cotton goods (separate creditors).

Walker John Chew, trading as J. C. Walker and Co., Mirfield, Yorks, wool extractor

Whitaker Herbert Alston, Hanover Square, Bradford, and Heptonstall, silk spinners, and trading as H. A. Whitaker and Co., Bermondsey, Bradford, and Tong, near Bradford, dye merchants.

Naylor Isaac and Charles Wm. Naylor, trading as Naylor and Co, Airedale Cliff, Newlay, and Charles Street, Bradford, Yorks, top makers.

Parker Alfred, and Matthew Parker, trading as Joseph Parker and Son, Batley, woollen manufacturers.

Andrew Richard and James Gott, Fountain Street, Manchester, and Old Hall Mills, Middelton, manufacturers of cotton goods.

Cayard Julias and Herbert Alston Whitaker, trading as Cayard and Co., Bison Silk Mills, Heptonstall, silk spinners.

Ashton Ralph Shorrock, Ellerslie, over Darwen, cotton spinner and manufacturer (separate creditors).

FRANKLIN INSTITUTE LIBRARY

Farrar Harrison and Samuel Farrar, trading as William Farrar and Sons, Stanningley, Pudsey, near Leeds, cloth manufacturers.
Frank Richard David, 19, Old Change, and trading as Howell and Co., Upper Street, Islington, also trading as Debenham and Co., at Western Road, Brighton, mantle and cloth merchant.
Litilewood Byram, 2, Cecil Street and Littlewood's Buildings, Huddersfield, mungo merchant.
Lonsdale John, Aldgate and Mitre Street, silk mercer and draper.
Low John Bruce, trading as J. Bruce Low and Co., Hackney Road and Maldon, Essex, manufacturer of tarpaulins, marquees, tents, and sailmaker.
Metcalf William and Joseph Hirst, Flushdyke, Ossett, Yorks, rag and mungo merchants.
Parratt Arthur Edward, trading as A. E. Parratt and Co., Bradford, stuff manufacturer.
Shorrock Eccles, Ralph Shorrock Ashton, and William Shorrock Ashton, trading as Eccles Shorrock, Brother and Co , Over Darwen and Tockholes, cotton spinners and manufacturers.
Thompson James and James Thompson Haddon, trading as James Thompson and Co., Duke Street, Bradford, wool merchants.
Akestoridi Alexander, Cooper Street, Manchester, Constantinople, and Bury New Road, Higher Broughton, merchant and shipper.
Braddock John, Warks Moor Hill, New Town, New Mills, near Stockport, candlewick spinner,
Carter John, South Lane Mills, Elland, Halifax, woollen manufacturer.
Dodgshun John William Morley, near Leeds and York Place, Leeds, cloth manufacturer.
Peace George Henry, trading as Aaron Peace and Co. and George Henry Peace and Co., Clayton West, near Huddersfield, woollen manufacturer.
Seymour John, Ashgrove, Mare Street, Hackney, upholsterers' trimming manufacturer.
Thornton Joseph, Emanuel Thornton and Valentine Thornton, trading as Thornton Brothers, Accrington, power loom cloth manufactuters.

Dividends.

Hardisty William H. (Liquidation), Huddersfield, shoddy and commission agent, late woollen merchant and yarn spinner. 1st and final dividend, 3d.; on and after October 16, between 10 and 12. G. G. Poppelton, 6, King Street, Huddersfield.

Trustees Appointed.

Sandiford Joseph (Liqnidation), Radcliffe, Lancashire, bleacher. Trustees, H. Vaughan and A. H. Lamb, Manchester, accountants.
Baybut Fairhurst, trading as F. Baybut & Co. (Bankrupt), Macnhester, fustian manufacturer. Trustee, T. W. Handley.
Gould John, trading as Joseph Gould and Son (Bankrupt), Leek, Staffordshire, silk manufacturer. Trustee, J. Kerr, Faulkner Street, Manchester, accountant.
Harrison Edwin (Liquidation), Shipley and Bradford, manufacturer. Trustee, J. Wood, Bradford, accountant.
Sofiano John (Liquidation), Mount Street, Manchester, Clayton Bridge and Higher Broughton, bleacher. Trustee, F. J. Astbury, Cross Street, Manchester, accountant,

Dissolution of Partnerships.

Stewart, Moir, and Muir, Gordon Street, and William Muir and Sons, Newmilns, manufacturers. As regards Robert Muir only.
Stoddard A. F. and Co., Glenpatrick, Elderslie, carpet manufacturers. As regards F. W. Stoddard.

Sequestrations.

Hay Archibald and Son, 145, Queen Street, Glasgow, silk merchants, and Archibald and George Clarke Hay, as partners and individuals.
Gilchrist Robert, 291, Duke Street, Glasgow, clothier.

Bills of Sale.

Bielfeldt, J. E., 207, Swan Row, Old Swan, Liverpool, tailor	£25	0	0	
Patterson J., 13, Wood Street, Northampton, draper	£396	13	3	
Turney P., Southend Street, Leeds Road, Bradford, tailor	£21	0	0	&c.
Grant B., Spring Gardens, Frome, dyer	£184	8	0	
Rawnsley A., High Street, Yeadon, near Leeds, tailor, &c.	£130	0	0	
Shaw H. M., Elmwood Terrace, Huddersfield, woollen merchant	£300	0	0	
Bell W., 69, Stafford Street, Hanley, hosier, &c.	£115	0	0	&c.
Gourley A., Market Street, Tredegar, Monmouth, draper	£350	0	0	
Clarke J., 56, Oakfield Road, Penge, draper	£50	0	0	
Whitwell Thomas, Commercial Street, Coxhoe, rag merchant	£26	0	0	&c.
Cooke (Cook) Charles, 69, High Street, Andover, draper, &c.	£100	0	0	
Alcock W. H., Dumbleton Road, Camberwell, draper's assistant	£36	0	0	&c.
Priestman R., Great Jackson Street, Hulme, Manchester, tailor	£50	0	0	
Rushworth Louis, Worneth, Oldham, cotton agent	£21	10	0	&c.
Browett Frederick, Kenilworth, trimming manufacturer	£71	0	0	&c.
Bates John, Abbeydale, near Sheffield, draper	£310	0	0	&c.
Broadbent Thomas, Landsdown Terrace, Leeds, woollen manufacturer	£50	0	0	
Bird A. A., Great Ellingham, draper, &c.	£270	0	0	&c.
Hicks Isaac, Uxbridge Road, Shepherd's Bush Green, draper	£125	0	0	&c.
Hunt T. W., Cambridge Street, Hyde Park, lace warehouseman	£210	0	0	
Higginson Robert, 6, Ashton Parade, Preston, spinner	£30	15	0	
Foaker Frederick, 60, Elm Park Road, Chelsea, trimming manufacturer	£300	0	0	
Hargreaves Thomas, 5, Bradshawgate, Bolton, draper	£425	0	0	&c.
Jardine David, Manchester Street, Manchester Square, upholsterer	£513	0	0	
McInnes W , Penn Road, Wolverhampton, tailor, &c.	£308	0	0	&c.
Pickering N., 54, Arkwright Street, Bolton, cotton spinner	£9500	0	0	
Vickers Thomas William, Staindrop, draper, &c.	£2750	0	0	
Vickers Thomas William, Staindrop, draper, &c.	Stlmt. in trust for wf.			
Armitage D., Beast Market, Huddersfield, weaver	£55	0	0	
Ferguson S., 43, Cliff Street, Red Bank, Manchester, tailor	£100	0	0	&c.
Good F. W., Weekday Cross, Robin, lace manufacturer	£120	0	0	&c.
Lewis H., Glyn-Neath, Glamorgan, woollen manufacturer	£29	0	0	&c.
McBride W. M. J., City Road, juvenile clothing manufacturer	£51	0	0	&c.
Onions W., Sheepshed, near Loughborough, hosier, &c.	£65	0	0	&c.
Percival O., West Park Street, Salford, mantle maker, &c.	£150	0	0	
Knight B., 4, St. Paul's Poad, Bohemia, Hastings, tailor, &c.	£40	10	0	
Land Amos, The Headlands, Ossett, rag grinder	£24	0	0	
Langford J. A., Turnham Green, Chiswick, tailor, &c.	£112	13	0	&c.
Rhodes J., South Parade, Cleckheaton, and J. Rhodes, Quarry Road, Cleckheaton flock manufacturers	£105	0	0	&c.
Sweeting J. T., Cuthbertson (and another), Wakefield, master tailor	£500	0	0	
Smith G. H., Workington and Blackburn, tailor, &c. (trading as Smith and Son)	£210	0	0	&c.
Wilde W., Park Lane, Macclesfield, retired silk manufacturer	£60	0	0	
White J., 23, Raglan Road, Burnley, weaver	£200	0	0	
Boggs H., Barker's Buildings, Hebden Bridge, draper	£60	0	0	
Carrell T. R., Brecknock Road, Camden Town, manufacturer of muffs	£50	0	0	
Cohen W., 36, Great Prescot Street, Whitechapel, tailor's machinist	£25	0	0	
Crowther W., 10, Back Whitely Street, Dewsbury, dyer	£7	5	0	&c.
Carter Mary Ellen, The Oaks, Sunderland, and W. W. Carter, The Oaks, Sunderland, draper (as trustee for his wife, the said Mary Ellen Carter)	£240	0	0	&c.
Collis G. P., Lake, Sandown, Isle of Wight, tailor &c.	£60	0	0	
Fenn S., 176, King Street, Hammersmith, draper	£280	0	0	&c.
Knights, W., Eagle Lane, Snaresbrook, clothier	£251	14	0	
Lupton J., 56, Manchester Road, Burnley, woollen draper	£100	0	0	
Holdsworth John, Cowbit Road, Spalding, wool buyers, &c.	£220	0	0	
Rothery J., 27, 95, Regent Road, Salford, draper	£195	0	0	
Solomon J., Aberdeen Terrace, Westbury-on-Trym, clothier	£220	0	0	&c.
Solomon J., 23, Bridge Street, Bristol, clothier	£465	0	0	&c.
Scowcroft J. T. Harrowby Street, Farnworth, cotton manufacturer, and Mary Scowcroft, Harrowby Street, Farnworth, dressmaker	£174	0	0	
Shorrock T., and D. Whewell, Over Darwen, cotton manufacturers	£1,000	0	0	

PATENTS.

Specially compiled for "The Journal of Fabrics and Textile Industries" by G. G. M. Hardingham, C.E., Fellow of the Institute of Patent Agents, 191, Fleet Street, London, E.C.

Applications for Letters Patent.

		No.
Cleaning fibres to be used as tissues. E. G. Brewer (La Compagnie Générale des fibres Casmos, Brussels)	4th Oct.	4722
Carding engines. E. Edwards (P Ponein, Paris)	7th Oct.	4784
Cutting machines for cloth, &c. J. M. Sellers, Keighley	9th Oct.	4798
Combing machinery. P. Kelly, Bradford, Yorks.	18th Oct.	4959
Doubling and twisting yarns. C. Dyson, Milnsbridge	2nd Oct.	4681
Dyeing compound. W. E. Aykroyd, Bradford	7th Oct.	4772
Drying wool, &c. D. P. Smith, Glasgow	11th Oct.	4823
Disintegrating woollen fabrics. J. C. Watson, Leeds	16th Oct.	4918
Destroying teasles, &c., from textile fabrics. O. Imray (La Société Harmel frères, Wal-des-bois, France)	21st Oct.	5009
Feeding woollen materials to carding machinery. E. Wilkinson, Marsden	25th Oct.	5085
Fleece dividing machines. L. A. Groth (J. H. Gilljain, Laurensberg, Aix-la-Chappelle, France)	24th Oct.	5063
Hearth and foot rugs. W. W. Smith, Kingsland	12th Oct.	4851
Looms. J. B, Alliot (J. Wade, New York)	30th Sep.	4666
Looms. J. A. Pickles, Burnley	2nd Oct.	4682
Looms. J. Ratcliffe, Great Harwood	4th Oct.	4719
Looms. J. W. Holmes, Preston	11th Oct.	4843
Looms. J. Almond, Blackburn	12th Oct.	4849
Looms. W. Youngjohns, Kidderminster	14th Oct.	4822
Looms. J. Bywater, C. Bedford, and T. Kershaw, Birstall	16th Oct.	4916
Looms. H. J. Haddan (H. Vassart, Roubaix, France)	18th Oct.	4965
Looms. F. M. Sykes and J. Hinchliffe, Holmfirth	21st Oct.	5007
Looms. T. Singleton, Over Darwen	23rd Oct.	5049

Opening fibres. M. G. Daughters, Old Kent Road 9th Oct. 4798
Ornamental frillings. C. Jackson, Nottingham 30th Sep. 4649
Pickers for looms. J. Challinor, Manchester 27th Oct. 5718
Roving, spinning and twisting fibrous substances. H. SpinIllingworth, Bradford 20th Oct. 4994
Spinning frames. J. Briggs, Jun., Wakefield 4th Oct. 4716
ning frames. F. and A. Craven and W. Allan, SpinBradford 6th Oct. 4761
ning and doubling fibrous materials. C. G. Bracewell Streand A. Pilkington, Barnoldswick, Yorkshire 9th Oct. 4801
tching or finishing woven fabrics. D. P. Smith, Glasgow 13th Oct. 4864
Velvets and velveteens. D. J. Crossley, Hebden Bridge and B. Cooper, Manchester 28th Oct. 5137
Wool washing machinery. W. H. Greenwood, Bradford and C. Hoyle, Keighley 13th Oct. 4867
Winding threads. J. H. Pickles, Burnley 27th Oct. 5121
Washing fabrics. J. Paterson, Belfast 30th Oct. 5146
Yarn winding machinery. J. Liddell, J. S. Brierley, S. H. Brierley, F. H. Hirst and D. Hamer, Marsh, Huddersfield 30th Oct. 5157

Grants of Provisional Protection for Six Months.

3830	3968	4132	4134	4140	4228	4263	4279
4282	4330	4331	4333	4337	4339	4340	4341
4359	4360	4361	4371	4377	4384	4398	4408
4439	4477	4500	4515	4520	4557	4570	4603
4613	4615	4641	4649	4681	4719	4761	4799
4823	4843	(All of 1882.)					

Notices to Proceed.

(Notice of opposition to the Sealing of a Patent must be given within Twenty-one days of the Notice to Proceed being advertised in the Commissioners of Patents Journal.)

Braiding machines. W. R. Lake (F. L. Voerkamp, C. F. Leopold, and W. Darker, Philadelphia, U. S. A.) 11th July 3288
Finishing textile fabrics. E. Edwards (C. J. Chollot, St. Quintin) 10th June 2743
Knitting machines. W. Harrison, Manchester 18th Aug. 3968
Looped fabrics (machinery for). W. R. Lake (C. Young, Chicago, U.S.A.) 7th June 2672
Looms and dobbies. J. Shorrock, Darwen 10th Aug. 3810
Looms. J. Knowles, Blackburn 14th June 2795
Looms. T. Isherwood, Westerley, Rhode Island, U.S.A. 19th June 2894
Looms. W. Smith, Heywood Lane 21st Sep. 4515
Machines for spinning flax and hemp. J. S. Coey and J. McArthur, Leeds 30th Aug. 4140
Pleating machines. C. G. Hill, Nottingham 5th June 2634
Preparing fibrous substances for spinning. H. J. Haddan (J. F. Gebhart, New Albany, U.S.A) 9th Oct. 4795
Pickers for power looms. J. Sowden, Bradford 15th Sep. 4398
Spinning and doubling machinery. W. Lancaster, Accrington 7th Sep. 4263
Spinning and doubling. R. Scaife, Colne 9th June 2707
Textile fabrics (clearing from straw, &c.) O. Imray (La Société Harmel frères, Val-de-Bois, France) 29th July 3602
Weaving sacks, bags, &c. W. A. A. A. E. and J. Briggs, Whitworth, Lancaster 16th June 2852
Dyeing, sizing and wringing, hanks. G. Heywood and S. Spencer, Radcliffe Bridge 5th Aug. 3746

Patents Sealed.

1646	1732	1744	1807	1894	1925	2029	2038
2051	2069	2079	2090	2183	2252	2287	2343
2433	2617	2799	2963	3100	3163	3501	3509
3542	3627	3628	3629	3634	3905	3959	
			(All of 1882.)				

Patents on which the Stamp Duty of £50 has been paid.

Jonathan Scharr, Bradford, "Improved arrangements and apparatus for bleaching, washing, cleaning, boiling, dyeing and disinfecting." 7th Oct., 1879 4052
Henry Ashworth and Thomas Ashworth, of Walsden, "Improvements in apparatus used in spinning and doubling cotton and other fibrous substances." 9th Oct., 1879 4081
Thomas Emmott, of Oldham, "Improvements in the manufacture of velvets and velveteens." 29th Oct., 1879 4413
John Stewart Templeton, Glasgow, "Improvements in the manufacture of ornamental pile fabrics." 9th Oct., 1879 4079
William Robert Lake, of the firm of Haseltine, Lake and Co., patent agents, Southampton Buildings, London, "Improvements in and relating to the colouring of fibrous materials for the manufacture of yarn."—A communication. 22nd Oct., 1879 4299
John Tatham, of Rochdale, "Improvements in machinery or apparatus for spinning or doubling cotton or other fibrous materials." 16th Oct., 1879 4185
James Henry Openshaw, of Bury, "Improvements in the manufacture of cloths known as cotton cords." 4th Nov., 1879 4487
Samuel Cook (senior) machine maker and Samuel Cook (junior), both of Bury, "Improvements in machinery or apparatus for sizing, varnishing, and stretching healds or heddles used in weaving." 20th Oct., 1879 4239
William Mather, of Salford, "Improvements in machinery or apparatus for printing textile fabrics." 23rd Oct., 1879 4323
John Horrock and James Horrocks, of Manchester, "Improvements in machinery or arrangements for doubling and winding, and doubling, twisting, and winding yarns or threads." 22nd Oct., 1879 4278
James Worrall, of Manchester, "Improvements in the mode of manufacturing pile fabrics, and in the machinery to be used in such manufacture." 17th Nov., 1879 4678
James Worrall, of Manchester, "Improved machinery for covering the selvages of finished and unfinished fabrics, and applying trade marks and ornamentation thereto, and for embossing and otherwise ornamenting the body of such fabrics." 21st Nov., 1879 4744
William Tatham and William Tweedale Heap, of the firm of William Tatham and Co, of Vulcan Works, Rochdale, "Improvements in the construction of cylinders for breaking up fibrous materials." 27th Oct., 1879 4362

Patents on which the Stamp Duty of £100 has been paid

Thomas McGrah, 42, Church Street, Sheffield, "Improvements in sewing machines." 28th Sep., 1875 3380

Copyright of Designs.

(Registered during October 1882.),

Class VI., Carpets.

387,379-87 Thomas Bond Worth, Severn Valley Mills, Stourport.
387,492 The Shepley Mills Linoleum Company, Guide Bridge.
387,513-28 Thomas Bond Worth, Severn Valley Mills, Stourport.
387,548 Shepherd and Beveridge, Kircaldy, Scotland.
387,592-97 H. R. Willis and Co., Kidderminster.
387,767 Shepherd and Beveridge, Kircaldy, Scotland.
388,231-32 A. F. Stoddard and Co., Elderslie, N.B.
388,287 The Kircaldy Linoleum Co. (Limited) Rosslyn Works.
388,332 A. F. Stoddard and Co., Elderslie, N.B.
388,672-76 Thomas Bond Worth. Severn Valley Mills, Stourport.
388,786-89 The Lancashire Oilcloth and Varnish Co. (Limited) Ridge Lane Mills, Lancaster.

Class XI., Furnitures.

387,151-52 Boden, Terras and Co., Manchester.
387,216-18 Daniel Lee, Fountain Street, Manchester.
387,258 Alexander Drew and Son, 15, Nicholas Street, Manchester.
387,494 D. Lee and Co., Fountain Street, Manchester.
387,531 The Whaley Bridge Printing Co. (Limited), 5, Charlotte Street, Manchester.
387,532 S. and F. Sternberg, 44, George Street, Manchester.
387,668 R. Dalglish, Falconer and Co., Manchester and Glasgow.
387,674-76 Edmund Potter and Co., Manchester and Dinting.
387,786 S. and F. Sternberg, 44, George Street, Manchester.
388,073-74 D. Lee and Co., Fountain Street, Manchester.
388,075 Thomas Hoyle and Sons (Limited), Manchester.
388,224 H. Scott, Richmond and Co., 30, Paternoster Square.
388,269-70 D. Lee and Co, Fountain Street, Manchester.
388,306 S. and F. Sternberg, 44, George Street, Manchester.
388,307-11 Edwards, Cunliffe, Wilson and Co., 155a, St. Vincent Street, Glasgow.
388,321 R. Dalglish, Falconer and Co., Manchester and Glasgow.
388,346 R. Dalglish, Falconer and Co., Manchester and Glasgow.
388,462-63 F. W. Grafton and Co., 91, Portland Street, Manchester.
388,464 S. and F. Sternberg, 44, George Street, Manchester.
388,640 R. Dalglish, Falconer and Co., Manchester and Glasgow.
388,774 S. and F. Sternberg, 44, George Street, Manchester.
388,857 S. and F. Sternberg, 44, George Street, Manchester.

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Contents.

	Page.
The London Chamber of Commerce and Textile Manufactures	61
Industrial Education in Ireland	61
Cotton	62
Eccentricity in Carpets	62
Application of Alizarine in Calico Printing and Dyeing	63
Lace and Lacemaking	64
The Brazilian Exhibition at Berlin	64
The Oldham Cotton Trade	65
Proposed Exhibition at Huddersfield	65
Scientific and Art Notes	65
Original Designs	66
Monthly Trade Reports	66
The Wool Harvest in New South Wales	66
Original Designs for Fancy Woollens and Worsted Coatings	67
The Bradford Exhibition	68
Machinery, Tools, &c.:—	
Strong's Feed Water Heater	69
A New Jute Machine	69
The Manchester Technical School	69
Odds and Ends	70
The Gazette:—	
Bankruptcies, Liquidations, &c.	71
Dissolutions of Partnership	71
Bills of Sale	71
Letters Patent:—	
Applications for Letters Patent, &c.	72
Copyright of Designs	72

Illustrations.

Original Design for a Toilet Quilt
Original Design for a Silk Handkerchief.
Original Design for a Jute Tapestry.
Strong's Feed Water Heater.

Notices.

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Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers in making enquiries of, or opening accounts with Advertisers in this paper, will kindly mention the *Journal of Fabrics and Textile Industries* as the source from whence they obtained their information

The London Chamber of Commerce and Textile Manufactures.

A GENERAL meeting of those members of the London Chamber of Commerce, who are interested in the textile trades, was held at the offices of the Chamber, King William Street, London, on the 29th of last month, Mr. S. Morley, M.P., presiding.

The Chairman, in opening the proceedings, said he was happy to be called upon as a member of the branch of trade contemplated by their present meeting. He believed they might do much good by establishing a standing committee of the trades connected with what was described as textile manufacture. There had been several occasions when questions had come up between them and the Government as to the modes of assessing duties, and as to the character which should be given to goods which were exported. Indeed, there were many questions which were interesting to them. He confessed that he just thought on one subject which, if he could bring any influence to bear, he would try to induce such a committee to deal with, and that was the the question of "dating forward." He did believe that even commercial morality in their various manufactures was involved in the methods adopted by them, for he took it that they were all pretty much tarred with the same brush, and if they could be led to some line that would be honestly and honourably binding on them all, he believed it would be most advantageous to them—to the retail trade as much as to the wholesale trade. At all events, as deeply interested in the branch of trade which they were now considering, he was happy to be of use to them, and although he would not be able to render them any active service in the future, still he would always be ready to co-operate with them in any way to promote the well-being and prosperity of those who were engaged in this very important department of manufacture.

Mr. W. Leaf, a member of the Council, explained that a meeting of some representatives of the textile trades was held in June last, when certain members of the Council of the Chamber were asked to draw up a list for a standing committee of the Chamber to take special cognisance of the textile trades. That had been done, and he now moved the adoption of the list by the present general meeting.

Mr. Buckingham seconded the motion. He said one reason why the list was longer than might be thought necessary for a good working committee was that in all probability sub-sections would be formed to deal with particular branches of trade. He could speak feelingly with regard to himself, because there were questions which much affected his particular branch of trade, and which would not affect the branches of trade of many of the gentlemen who would be called upon. He referred to the duties which were being levied on goods which were sent into foreign countries. Although at the present time they were not in a position to grapple with the French treaty because it had lapsed for the moment, at the same time all those gentlemen who were engaged in the French trade must feel dissatisfied with the numerous obstacles the French Government were placing in the way of merchants dealing with that country. Only within the last few days the French Custom-house had sought to levy the full extent of the duty which the original tariff would allow them to do. They charged duty on the boxes in which cravats were placed, and were seeking to charge duty upon all those boxes and packages. The duty was trifling, only three farthings a box, but it was done to annoy the English manufacturers. He had been told the pin manufacturers, because they had sent their pins attached to a piece of paper, had been charged duty on the piece of paper. He was particularly anxious that the first committee should be a fairly representative one, in order that they might subdivide to suit their own purposes. Questions in regard to carriage were constantly cropping up, and it was found that in some cases Manchester merchants were paying less than London merchants, and with those questions it would be the duty of the committee to deal.

A discussion was raised on the point that the names submitted were not representative enough, but ultimately the list proposed, with slight alterations and several additions, was adopted unanimously, power being given to add to the number till the limit of 30 members had been reached.

The Chairman expressed the hope that by this means a sufficiently varied representation would be obtained, and by the adoption of his suggestion members may send in the names of those whom they deem suitable to serve on the committee.

A vote of thanks to the Chairman brought the meeting to a close.

Industrial Education in Ireland.

The members of the Royal Commission on Technical Instruction having ascertained that in some Continental countries instruction is being given successfully to the children in elementary schools in the use of the tools ordinarily employed by workers in wood and iron, and that in remote and poor districts, domestic trades have been and are being taught, with the result of giving fairly remunerative employment to the population, two of their body recently visited Ireland in order to inquire whether similar steps might be taken with advantage to the people, more especially in the west, where employment is at present scarce and greatly needed, in order to supplement the

very inadequate sustenance afforded by the cultivation of small patches of barren soil. They have obtained promises of support from various influential quarters, including His Grace the Catholic Archbishop of Tuam, several bishops, and members of the Protestant and Catholic clergy, the National Board of Education, the managers of the Artane Industrial School, and various other public bodies and representative persons. At the suggestion of the Archbishop of Tuam, and of the Very Rev. Dr M'Cormack, Bishop of Achonry, they have drawn up a series of questions, with the view of obtaining definite information that may guide them in their conclusions and recommendations.

Cotton.

Cotton wool is obtained from the seed vessels of a plant belonging to the order of Malvaceæ or Mallows and to the genus Gossypium. It is a natural production of all intertropical countries. Some naturalists speak of ten varieties of the plant, others of five, but for all practical purposes the division into three classes will be sufficient, viz, herbaceous cotton, shrub cotton, and tree cotton, according to the mode of growth. The most useful of all the kinds is the herbaceous, extensively cultivated in the southern part of the United States, in India, China, and other warm climates. It grows from two to five feet in height, bears leaves of a bright dark green colour, streaked with brownish veins, and its fibrous fruit is preceded by white or pale yellow flowers, which, falling off, a triangular capsule appears which increases in dimensions until it becomes the size of a small walnut The expansion of the cotton bursts the brown pod, when the snow-white or yellowish downy substance appears ready for the gathering. The planters of Georgia and of the adjoining States cultivate three descriptions of this cotton—first—the sea-island or long staple cotton; second—the nankin; and third—the green-seed cotton. The seed of the sea-island cotton, which is an annual, was taken from the West Indies to the Bahama Isles, and from thence was introduced into Georgia in 1786. It was found to flourish most satisfactorily in the low small islands lying along the American coast from Charleston to Savannah. The sandy soil of these islands, impregnated with salt, together with the saline atmosphere, conduce to the growth of the long stapled, fine silky cotton for which this coast is remarkable. There was soon a great demand for this variety, but owing to the limited extent of coast upon which it can be grown and the great cost of production it can be supplied only at a very high price. The celebrity which this fibre had obtained caused the same seed to be planted upon the highlands of the State, but it was found that the staple grew much shorter; still the quality, though somewhat inferior, was very valuable, and it gained the name of *upland* or *bowed* Georgia cotton (bowed from the mode of clearing it from dirt and knots with a highly elastic bow), and of short-staple cotton (from the shortness of its fibre compared with that of the sea-island cotton) The *nankin* cotton bears the yellow wool of which nankeens are made; the quantity is limited. *Shrub* cotton is produced in most countries where the annual herbaceous cotton is found. In the West Indies its duration is two or three years. The soil and climate of these islands are peculiarly suited for the extensive production of cotton, but from some cause the supply is comparatively small. In India, Egypt, and some other places the duration of the plant is from six to ten years. In the hottest countries it is perrennial and supplies two crops a year, but in colder climates it is an annual. Brazil produces immense quantities of shrub cotton, and sends large cargoes of good quality to European markets. *Tree cotton*, as a marketable product, is scarcely known. It grows in India, China, Egypt, and in the interior and on the western coast of Africa. In Borneo and some other tropical climes the plants grow wild and attain a height of from twelve to twenty feet. Cotton requires a dry sandy soil, and will thrive luxuriantly where the land is too poor for the production of any other valuable crop. Wet seasons are fatal to the plant, but the neighbourhood of the sea is favourable to the growth of the finest cotton. The seed of the herbaceous cotton is sown by hand in March, April, and May according to the season, and is gathered from August to the end of the year. The greatest care and attention are bestowed in America on its cultivation, and planters are generally rewarded with abundant crops, whilst in India the mode is very slovenly, and the quality of the produce is consequently greatly inferior to that of the United States After the planting has taken place the lands are carefully weeded at short intervals, and as the plants come up the weakest are pulled out, only two or three being left in each hole. When they are a few months old they are again weeded and thinned, and the tops taken off to prevent the growth in height and to ensure that of side branches. As soon as the pods are ripe women and young children supplied with baskets or bags slung from the shoulders go into the plantation, in fine weather only, and as soon as the morning dew has disappeared, collect the seeds and cotton from the ripe pod, leaving the husk empty. The cotton does not all ripen at one time; therefore, the gatherers are obliged to go over the same field many times, for if the cotton be not collected as soon as the pod bursts the heat of the sun is likely to injure the colour, or it may be spoiled by the dew or blown away by the wind. The plant during its growth is liable to many diseases—the *blast* caused by too much moisture, which rots the roots; this may occur on badly drained lands. In wet seasons the fruit is often destroyed by an overgrowth of vegetation. In times of great drought the plant appears as though it was scorched by fire; some of the blossoms fall, the pods become black, the foot-stalks wither and rot, and then the pods fall off. The only remedy in this case is favourable weather and careful pruning. Another enemy is the cotton bug, which often does immense mischief to a crop, but the most formidable of all enemies is the cotton caterpillar. The insect is about one or one and a half inches long, and it often appears in such numbers that whole plantations are destroyed in one night, and as soon as one field is devoured, they move off to another, often at some distance, and repeat the same operation there unless stopped These caterpillars have several enemies amongst the feathered tribe—the turkey, the house wren, the manakyn, &c., but the planters often rid their fields of these insects by the fumes of sulphur.

(*To be Continued*).

Eccentricity in Carpets.

A writer in a recent issue of the *American Carpet Trade and Review* says:—"In no department of art, perhaps, is eccentricity more apt to obtrude itself for adoption than in that of carpet designing The impersonatity of the designer and the numerous barriers interposing to keep him ignorant of the general criticism on his work tend to justify him in giving free scope to his "taste." If his taste be good and his judgment of what is requisite in colour and form be correct, then the carpet designer becomes the friend of all woman and salesman kind. If, on the contrary, he be simply an eccentric individual, inspired with the idea that the right shapes and shadows for carpet designs are yet to be imagined, then the designer resolves himself into a sort of a Pariah who may deluge the market and load up retailers with carpet patterns, saleable only through the medium of special appeal and lengthy argument to the customer. Decided oddities are apt to be offensive. No art of persuasion can convince one that an effect is pleasing merely because it is odd. That carpet designer is getting rapidly "off colour" who pits his individual whims against those methods of adornment which stand approved in his day and time. Few men create epochs in art, even where art is their calling. Nor is the run of artists much above their fellows in proper appreciation of the truly artistic. The "common people" have an inherent germ of art, which responds quickly to fitness and beauty of design, but this intuitive perception, found in average humanity, is too often violated in efforts to engraft on us the strange and the extreme in art. What well-trained carpet man fails to discern the eccentric among the patterns laid before him as the latest and best of the season's offerings? In vain does the buyer study the eccentric carpet Conclusions as to its merits are impossible. He changes his position to get a different light upon it; discusses its pattern; wonders if it will sell, and at last orders a piece or two "just to try it." Being a decidedly eccentric pattern it is ordered, with misgivings as to its chance for

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popularity. A wide difference may exist between a novel and an eccentric pattern. The former may be handsome, while the latter is simply odd. Novelties are essential to trade, but if successful, they are generally old favourites in a new garb and seldom perplex us with a study as to their eccentricities. As with genuine man, so with the palpably eccentric carpet pattern, we cannot make up our mind whether to like or dislike, and so we generally discard and turn away. The career of the eccentric carpet "in stock" is generally a dreary one, and is familiar to all the "boys" who have wasted their eloquence on the floor and on the road in attempting to "place" them. The "stickers" are always recruited from the eccentrics, and each finds in the end the same destination. People who prefer the eccentries are generally of the same persuasion as the patterns they prefer. They must be provided for, but not at the expense of the general stock and the entire community for whom it is purchased." These remarks may be equally applied to designs for all classes of fabrics.

Application of Alizarine in Calico Printing and Dyeing.

As from year to year cotton goods, dyed or printed with alizarine (reds, violets, browns, oranges, &c.), are more in demand on account of their fastness, and as especially the consumption of the so-called purple styles, has of late greatly increased, it will be interesting to many to learn the present use of alizarine in German print and dye works.

In general, we distinguish yellowish and bluish alizarine: the former contains more flavo and anthra-purpurine, while the latter is nearly pure alizarine. These qualities are used according as it is intended to produce yellowish reds, pure reds, or bluish reds. Besides, every alizarine works has certain tones of colour which in their kind are unsurpassed; the differences are fine, but they can be recognised.

Alizarine is fixed upon the fibre, for reds with red liquor, for violet with black liquor, for brown with chromic oxide; nitro-alizarine for orange is fixed with salts of alumina, and gives catechu shades with chrome mordant. Alizarine blue is fixed with the latter mordant. Both for dyeing and for printing it is indispensible that the goods should be bleached to perfection, otherwise much inconvenience may be encountered.

Alizarine for Printing Reds.

The pieces well bleached are passed through a bath made up of an emulsion of alizarine oil or distilled water, in the proportion of 1 in 10, 15, 25, or even 50, according to the strength of the alizarine oil, and according as has been found most advantageous in preliminary trials. The pieces, after padding in this emulsion, are dried on brass cylinders, and printed with the respective steam colours for red or rose. Till lately, red liquor and nitrate of alumina were exclusively used as mordants. They both, however, have disadvantages, which have been overcome by the well-known experiments of Stork, who uses, instead of the above mordants, sulpho-cyanide of aluminium. Still, for various reasons, the old process is in use in a number of establishments. The following colour is boiled in tin or copper pans:

Alizarine Red No. 1.

Wheat starch	750	parts.
Water	4,700	,,
Alizarine, yellow cast, 20 per cent.	750	,,
Alizarine, blue cast, 20 per cent.	750	,,
Acetate of lime, 22° Tw.	400	,,
Acetic acid, 8° Tw	1,000	,,
Tragacanth mucilage (1 in 9)	580	,,

When these ingredients are incorporated, stir in

Olive oil	800	,,

and let cool. Before printing add

Red liquor, 17° Tw.	540	,,
Nitrate of alumina, 22° Tw.	360	,,
Oxalate of tin	13	,,

Make up to 10,000 parts with water.

The following colours are mixed cold:

Alizarine Red No. 2.

Starch and tragacanth thickening	6,700	,,
Alizarine, yellow cast, 20 per cent	1,200	,,
Acetate of lime, 22° Tw	400	,,
Olive oil	800	,,
Sulpho-cyanide of aluminium, 29° Tw.	900	,,

Alizarine Rose A.

Starch and tragacanth thickening	7,800	,,
Alizarine, blue cast, 20 per cent.	430	,,
Water	444	,,
Acetate of lime 22° Tw	156	,,
Olive Oil	263	,,
Red liquor, 17° Tw	312	,,
Oxalate of tin	166	,,
Acetate acid, 8° Tw	429	,,

According to the more recent process there are used instead of the three last ingredients:

Sulpho-cyanide of aluminium, 29° Tw	312	parts.
Water	595	,,

The goods are printed, dried, but not too strongly, and then taken for one minute through the English apparatus for fixing aniline colours. The pieces are then steamed for one hour, either under pressure in the chest, or, on the more modern principle, spread out. In order to raise the red colour various methods are in use. The pieces are run for a minute through a chalk bath at 167° Fahr. (155 grains per 35 fluid ozs. water,) washed, soaped, either singly or tacked together, for a quarter to half an hour, according to the nature of the goods, at a boil, in one water or in several, using about one lb. curd soap to a piece of 150 yards. Many establishments take the goods, after soaping, through a steam chloring apparatus to improve the whites, and soap again in order to revive the reds, which suffer a little from the chlorine. Thorough washing after the soaping is a main condition for producing good whites.

In other establishments, after soaping and chloring, the pieces are cleared under pressure in a closed boiler with

Tin crystals	1	oz.
Soda crystals	1½	oz.
Weak soap lye	12½	pints.
Water	350	pints.

Reds and roses so treated are particularly fine.

Sometimes, in addition to the whites left in printing, certain portions are reserved, and designs in alizarine rose are blocked in. For these reserves may be used sulphate of zinc or tartrate of chrome.

Resist 1.

Sulphate of zinc	1,104	parts.
Water	828	,,

Dissolve, and add

Soda lye, at 62° Tw	70	,,

Let down with

Water	130	,,

Lastly,

Gum-water (1 in 4)	7,895	,,

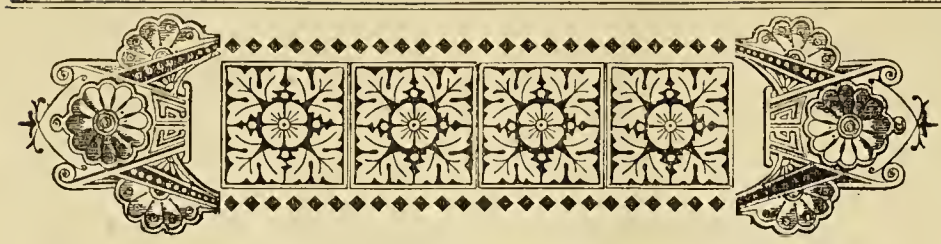
After printing and steaming, these styles are treated like ordinary steam alizarine roses.

Before passing to dyed alizarine reds, we will take a brief survey of the preparations necessary for the steam colours. Red liquor is prepared either by the double decomposition of sulphate of alumina and sugar of lead, or by dissolving recently-prepared hydrated alumina in strong acetic acid. Acetate of lime is prepared by dissolving fresh-burnt pure lime in acetic acid at 8° Tw. Nitrate of alumina is prepared by the double decomposition of alum and nitrate of lead. Oxalate of tin is obtained by dissolving precipitated hydrated oxide of tin in oxalic acid (and is consequently quite different from the oxalate of tin commonly supplied to dyers, which is a muriate or sulpho-muriate of tin, to which a little oxalic acid is added).

Sulpho-cyanide of aluminium is formed by treating sulpho-cyanide of barium with sulphate of alumina.

Tartrate of crome is formed by the action of pulverised tartaric acid upon bichromate of potash.—*Dr. Guttlieb Stein in Leipziger Faerber und Zeugdrucker Zeitung.*

(*To be Continued.*)



Lace and Lacemaking.

Two lectures on "The Art of Lacemaking" were recently delivered at the Royal Institution, Manchester, by Mr. Allan S. Cole. In introducing his subject, Mr. Cole said he would devote his first lecture principally to describing methods of making lace. Lace might be called a fabric produced by either plaiting, or twisting, or looping threads together. All these operations were distinct from that of weaving. Weaving was specially employed to obtain a close texture, but plaiting, twisting, and looping were peculiarly identified with the production of open textures. These three methods were very ancient, but their use in expressing ornamental forms was comparatively modern. The result of this use was lace. Lacemaking divided itself into three classes. Two came into the category of manual arts, and the third into the category of mechanical arts. Hence we had lace made upon a pillow, lace made with a needle, and lastly lace made by a machine. He would deal first of all with needle-point lace, and endeavour to describe how it came to be made and how it was made. Needlework was of considerable antiquity, though not, he believed, quite so old as many would have us think. It might answer their purpose to accept the fact that in the fifteenth century fine embroideries were used and produced in Europe. The art as distinct from the design no doubt came from the East. For some reason, which would take a long time to arrive at, the embroidery of white linens came especially into fashion towards the end of the fifteenth and the beginning of the sixteenth centuries. Patterns were wrought upon the material, and from this people passed to devising methods of decoration other than that of merely loading the surface of the stuff with embroidery. A lightness of effect was obtained by cutting out pieces of the stuff. Another sort of open embroidery was produced by withdrawing threads instead of cutting out bits of stuff. One of the diagrams was of a white linen cloth, decorated with three sorts of open needlework. Two they were acquainted with, namely, the cut work and the drawn thread work. The third was darning upon net. The Italian name for this work was "punto a maglia," and the French "lassis" or "lacis." There was still another sort of open work which must be looked at. It was simply the cutting a pattern out of a piece of stuff, as was seen in the illustration, the edges being bordered with some gold wire. In the specimens to which he had called attention it would have been noticed that the needleworker started from a foundation of linen or net. None of those works, therefore, were true needlepoint laces, as he should define them Directing attention to a sampler of stitches, he said it was interesting from the fact that it was probably made by some little Puritanical schoolgirl, who, according to the wont of her companions, embroidered her name, "Margaret May," and the date, 1654, upon the sampler. It included all the stitches on linen to which he had alluded. There was a further fact of some importance connected with it. The first specimens of open embroidery which he showed were made principally in Italy during the sixteenth centure. This sampler was made in England during the seventeenth century. So that we might seem to see how one country received ideas and methods from another. In linen and cut and drawn work, it appeared that about 1560 the needleworkers of Venice invented a new method of embroidery. In effect its results were almost undistinguishable from the geometrical and rectangular cut or drawn linen work. It had the merit of greater lightness, and the novelty of the process in making it must have been attractive. Needlework was greatly in vogue in Venice and Italy in the sixteenth century, and the new process was called "punt in aria" or "point in the air." Mr. Cole explained how this lace was made, and proceeded to speak of the characteristics of various other kinds of lace. One marked difference between the process of pillow lace making and that of needlepoint lace making was that in the former a number of threads were by turn brought into frequent operation, whereas in needlepoint lace making after the skeleton pattern had been made in thread one thread only was kept in operation for working the stitches cast over or in between the skeleton pattern. A further difference was that by the pillow process one never made a succession of button-hole stitches, for the good reason that it would be impossible to do so with bobbins. Plaiting and twisting were the two leading operations in pillow lace making. As regarded pillow lace, he referred to a few early forms of plaiting and twisting with a view to tracing the outgrowth of pillow lace from such earlier works. Plaited and twisted work in its first phases took shape in ropes and cords. Passing over the most luxurious period of Roman history, through, the decline of the empire and the development of Christian ecclesiasticism, we might come to the ripest period of the Italian Renaissance—namely, after the year 1450. In vain might we look for indications of pillow or indeed any lace in the paintings of that time. Small cords were used along the edges of articles of dress. Sometimes these cords were sewn on to the stuff. At others they were fashioned into open loop work along the edges, this being apparently the "parting" spoken of by fifteenth-century authors. In conclusion. the lecturer called attention to lace-making by machinery. The process arose, he said, from the invention of the frame for knitting, the stocking machine being in course of time modified to make nets and imitate patterns of hand-made laces. Commenting on the near approach made in machine work to hand-made lace the lecturer said it was not difficult to detect one from the other, the former being hard, and having a ribbed character. In a design which he exhibited of counterfeit Mechlin pillow lace, he pointed out that in the machine-made lace a cotton, instead of a flax, thread was used. People who were expected to know were, however, deceived even in so elementary a matter of connoisseurship as that of distinguishing between a machine-made and a hand-made lace. In the second lecture Mr. Cole directed particular attention to the patterns produced in lace at different periods and in various countries, and pointed out that the design of a piece of lace in many instances was scarcely any guide as to its origin or peculiarity. The simple knowledge that such and such a piece of lace was Venetian, or French, or English was not, perhaps, of any instructive importance. What he thought one required to know and understand was the ingenuity and ability displayed in making lace, and in scheming patterns or designs for it. It was admitted that principles were of use in carrying out work which we wished should be good. We need never be so wedded to our principles as to feel that none better could be given to us. In referring to principles he wished it to be understood that he did not propose to advance them as though they were perfect and beyond revision. For instance, one principle in regard to designing generally seemed to him to be that the nature of the materials one was going to employ as the vehicles for expressing a design must be fully considered. It must be remembered that the methods of expressing a design—namely, looping, plaiting and twisting threads, and possibly the ultimate use of the lace for which the design was being made—would have some weight with one. For example, a design on a large scale for a curtain or hanging might hardly be appropriate to a handkerchief or a flounce. Modification of its proportions might not be found to bring it within the range of what was suitable for a collar. Then, again, the sort of design which was used for raised needle point laces might not seem to be suggestive of the character of pattern to be well worked out by the close twistings of bobbin and beam threads in a machine. The suitability of subject—that was pattern—to material was, he thought, very often disregarded. Leaving the matter of suitability of design, which was as important in lace making as it was in any other art or art manufacture, he would endeavour to demonstrate how patterns had succeeded one another and how some seemed to have been regulated by well-considered and obvious principles, and others by less-considered principles. He pointed to original designs for lace, and proceeded to speak of the circumstances which seem to have led to the making of lace and the preparation of designs. The productions of early lace makers in Italy and Flanders were especially noted, after which Mr. Cole made reference to various phases of design from 1560 to 1881. The variety of pattern, he remarked, was very great. Given the fullest development of methods of making lace by hand, and nothing apparently daunted the lace-maker. The pattern-maker elaborated all sorts of quaint fancies, adopted all sorts of forms and motives for his ornament, and the lace-maker strove his utmost to reproduce these forms in a realistic manner. In the condition of such realism he thought that sight was lost of the utilitarian side of the character of lace. Skill and materials were permitted to do what they could; the suitability of the materials to the forms they were made to resemble, such as full-blown and dexterously modelled flowers, was also evidently put on one side. And finally people might well exclaim at the misapplied or wasted labour consumed in producing lace when suitability of form and material and use were rejected as unnecessary principles. A new condition of things was, he hoped, arising. Schools of art and museums were formed to teach the people something about the principles of ornament, and something about the different materials in which ornament had been expressed, as well as something about the methods or ways of workmanship which the expressions had involved. To spread a knowledge of how ornament should be designed, and what sort of ornament seemed to belong to a special kind of material, or method of using the maierial, was, he ventured to think, one of the chief aims of the system of art instruction throughout this country. We were very much accustomed to feel sufficiently learned if we knew the date and place of production of a certain object. This, however, certainly in the case of lace was of little real instructive value. By reviewing the productions of all periods and trying to perceive how the character of them had undergone modifications, we might acquire a valuable knowledge of what was good and useful to adopt for the artistic improvement of a production. Production came in response to demand, so that if the demand were made by people attuned themselves to a higher standard of taste than that which vaguely pretended to recognise beauty in antiquity, or in rarity or in curiosity, it followed the production would be less precarious in regard to its ornamental character.

The Brazilian Exhibition at Berlin.

The attempt which is being made by the Central Association for Commercial Geography to familiarise inhabitants of the German Empire (and indirectly the other nations of Europe) with the natural and industrial resources of Brazil is, to a certain extent, novel, and the ill-fated exhibition at Porto Alegre was in part designed for the purpose of displaying to the Brazilian people the leading products of German industry. In addition to the direct interest which German shipping houses at the Brazilian ports, and their correspondents at Hamburgh or Bremen, would have in the development of trade in the various products usually received from South America, there is the additional prospective gain arising from the introduction, on a more extensive scale, of the work of German looms and furnaces into the Brazilian market.

The scheme was originally supported by the Brazilian Government in a practical manner, and a grant of money was in view. A change of Government proved, however, to be unfavourable to the prospects of the exhibition. The reluctance

of certain leading firms to participate in the display was also a disappointment to the promoters. Thus, the collection submitted to the public of Berlin on October 31st has not been grouped together without a full proportion of the difficulties usual in such cases.

The show of cotton is considered hardly on a par with the display of the other articles received from Brazil. As, however, the production of cotton is by no means so important as it was ten years ago, this fact is easily accounted for. According to the *Central Blatt für Textil Industrie*, the reduction of the annual yield has been from 90 million pounds in 1873, to only 30 million pounds in 1880. This remarkable decline is attributed to the rapid development of the cultivation of coffee and sugar. The latter articles have proved more profitable than cotton, and there being no increase of population or immigration on a scale commensurate with the augmented importance of these branches of agriculture, the needful labour has had to be diverted from cotton-growing. In the absence of exact internal statistics, the above figures are based, it would seem, on the exports. They may, however, be fairly considered to show the state of the case, as the domestic textile industry is too unimportant to have, by any increased requirements, caused the large falling-off in cotton exports during recent years.

Silk-worm cultivation is represented by samples of raw silk reeled by J. D. Von Schlabiendorf, who has at his establishment, in the province of Rio Grande do Sul, no less than 600,000 mulberry trees of four years' growth. Samples of silk produced in another district by Italian colonists are also exhibited. For the purpose of comparison, a variety of samples of European and Asiatic silks are displayed in an adjacent show-case. The richness of Brazilian vegetation is illustrated by a varied collection of fibres. The Gravata fibre (yielded by the wild pine-apple) is exhibited by Herr Frehse, who also contributes a specimen of the straw. Regret has been expressed that no samples of yarn from these fibres have been shown, as illustrating the practical uses to which they are put in Brazil; and it is suggested that at the close of the exhibition the samples should be placed in the hands of suitable manufacturers, in order that the industrial value of the fibres represented might be fairly tested. Amongst other fibre exhibits, notice has been accorded in the technical press to the Macahyba fibre, shown by the *Sociedade auxiliádora de Agricultura* of Pernambuco.

The national wool manufacturing industry is represented by samples of flannels and cloths from the factory of C. Rheingantz (Rio Grande do Sul). The class of flannel made by this firm is largely used in Southern Brazil. This house also supplies cloth which is used in the Brazilian army. It is a subject for comment, that the Brazilian cotton spinning and weaving industries have not contributed anything to the exhibition. There are, it appears, 860 looms and 85,000 spindles, occupied in that branch of the national manufacture.

In addition to the above exhibits, there is a very good show of various descriptions of dye-woods. Tobacco, cigars, coffee, and other goods of great importance find a place, and add greatly to the attraction of the exhibition. Considering the great difficulties the promoters have had to contend with, the display is very creditable, and should prove of exceeding value in a commercial sense.

The Oldham Cotton Trade.

The three months ending November 30th has been considered a "bad time" in the Oldham cotton spinning trade, but if the stocktakings of the modern mills be taken into account the results have not been unsatisfactory. Three large concerns which took stock recently show an average dividend of 9 per cent. per annum. The question now arises, if the past quarter has been "bad" what may be expected in the new year, with a larger supply of cotton of a superior quality than last year and also a better trade? The feeling amongst the companies is one of confidence, and it is anticipated that large profits are in store for the "limiteds." The shares of the leading companies are held for higher prices, and there is all round a hardening tendency. There is considerable rivalry amongst the companies as to which can make the most money, and also which can make the best yarn and produce it at the cheapest rate. This stimulating influence is a healthy sign, for new arrangements are continually being made to cheapen cost. Whilst old spinning mills in East Lancashire will be losing money, Oldham spinning mills will be making money, owing simply to their being able to produce an article better in quality and cheaper in cost.—*Manchester Guardian.*

Proposed Exhibition at Huddersfield.

The Technical School at Huddersfield, which has been in course of erection for some time past, is approaching completion, and it is hoped that it will be ready for occupation in April or May next. In connection with the school a project is on foot for the holding of a Fine Art and Industrial Exhibition similar to the very successful one closed a few days ago at Bradford. It is intended to hold the Exhibition in June, July, August, and September of next year. For this purpose a Committee of very influential gentlemen has been formed, which consists of the whole of the Council of the Chamber of Commerce (many members of which are well known throughout the woollen districts), and the Committee of the Mechanics' Institution, from which two bodies the new Technical School Committee has been elected. A large fund has already been guaranteed, more than sufficient to meet the expenses of the project, which shows that the promoters are thoroughly in earnest in their work. The exhibits are to consist primarily of textile goods and machinery of all descriptions used in their production, and of the various fine arts. At the numerous local exhibitions, which have been held during the past few years, success, on the whole, has crowned the efforts both of the promoters and of the exhibitors, and if the Huddersfield Committee shows as great an amount of spirit and energy as was brought to bear on the recent exhibitions at Bradford, Worcester, and Tynemouth, the result will, we augur, be a gigantic success. Huddersfield, like Bradford, is in the midst of a densely populated district, the inhabitants of which are largely dependent on the success of her manufactures and on her commerce with different parts of the world, and who will, if the project be put before them on such a scale as was the one at the latter named town, attend in such numbers as to ensure the success of the venture in a financial point of view. In reference to the number and quality of the exhibits, we have no doubt that well known local firms, and others from a distance, will show their usual enterprise by contributing exhibits worthy of their reputation, and thus, in this point of view, make the undertaking worth the trouble and pains that will have to be expended both by the promoters and exhibitors in making the affair successful. It has been suggested that, providing the laying out and enclosing of the Public Park (purchased by the Corporation some time ago) could be sufficiently advanced by May next, that some member of the Royal Family might be asked to open it and the new Technical School at the same time. If this suggestion could be brought to a practical issue, there is no doubt that the presence of Royalty would (as in the case of Bradford) further enhance the success of the undertaking.

SCIENTIFIC AND ART NOTES.

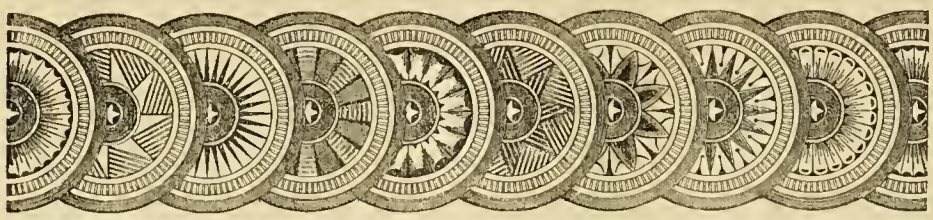
A "Fine Arts Insurance Company, Limited" has been formed, to insure works of art against fire. The capital is £1,000,000 in £5 shares. Among first subscribers are C. Wentworth Wass, of Upper Norwood; W. M. Thompson, fine art publisher, Chelsea; and J. E. Collins, artist. The directors include Lord Robert Montague, T. O. Barlow, R.A., and E. J. Poynter, R.A.

* * * *

The section of technical instruction of the Brussels Chambre Syndicate has adopted the report of the competitions committee, appointed last June. This engages the section to organise an exhibition of lace, which will include (1) the ancient productions of Belgium and other countries, and (2) modern lace and designs exclusively Belgian. There is also to be a competition for a lace design, and for a fan with design of the frame.

* * * *

A foreign contemporary says:—When silk is steeped in a solution of stannic chloride and then thoroughly washed in order to remove the excess of uncombined salt it is found to have increased in weight and to have absorbed a quantity of stannic oxide proportioned to the concentration of the solution and the length of immersion. If the silk is then passed into boiling suds, washed and replunged in the bath it fixes a new quantity of tin and by repeating these operations its primitive weight may be doubled. This furnishes a ready method of loading silk with a colourless oxide, in order to receive a permanent dye of any hue that may be desired. The weight of silk which has been thus loaded with stannic oxide may be increased still more by putting it in a solution of any tannic material. This cannot be done, however, where delicate shades are required, because the impurities of the tannin produce a muddy tint.



ORIGINAL DESIGNS.

On our first plate will be found a clever design for a Toilet Quilt, which reflects great credit upon the designer, Mr. William Tait, 34, Carter Street, Greenheys, Manchester.

* * * *

Our second plate represents a design for a Silk Handkerchief, the work of Mr. J. G. Bowins, 68, Mawson Street, Manchester. This sketch exhibits marked skill on the part of the designer.

* * * *

Our third plate shows a rough sketch, which is intended for a Jute Tapestry, but which offers suggestions to manufacturers of various kinds of fabrics. This design is drawn by Mr. R. Lord, 3, Gerrard Street, Halifax.

* * * *

*** We beg to inform manufacturers and others that adaptations of designs, published in the "Journal of Fabrics and Textile Industries," can be made at the Office by experienced Designers, and that Original Designs can also be furnished at moderate charges.

MONTHLY TRADE REPORTS.

Wool.—The London sales have been characterised by a fair demand for faulty sorts at reduced rates, and by a good demand for good qualities at increased prices As compared with the preceding sales Australian wools ruled rather weaker, scoured and cross-breds declining ½d. to 1d. per lb. for supplies of the old clip, but those of the new clip brought rather better prices. Cape wools of good quality realised rather higher prices. In Edinburgh and Glasgow business has been of a slow and dragging nature, but prices have been fairly maintained. In the Bradford and Halifax trade quietness has prevailed, and only a small amount of business has been done, and prices have had a downward tendency. The firmness at the London sales has not done much towards improving prices in the Yorkshire worsted district.

Cotton.—Operations in the raw material have passed freely, prices have fluctuated considerably, but with the close of the month they have shown a considerable decline. A large crop in the future is assured, and this fact compels holders to offer their stocks rather freely. Spinners now stand in a better position than they have done for some time past, as yarns have, during the month, kept very firm in price. Stocks have been well sold in nearly every department of the market. Cloth of most sorts was in fair demand at the beginning of the month, but a falling off was visible towards the close. Prices, however, are still unremunerative, especially for the lower qualities of goods. The better qualities of shirtings have been in the greatest request, and the demand still continues.

Woollen.—Manufacturers in Leeds and Huddersfield keep well employed. although new orders have not been quite so plentiful as could have been wished Cheap tweeds for suitings have met with a steady demand. The better classes of worsted coatings, cheviots, tweeds, and other fine cloths have met with the greatest demand In the warehouses many buyers from different parts of the country have operated freely, where a concession in prices could be obtained. The shipping business has been of an average nature, America, Australia, and Canada taking the largest quantity of goods.

Linen.—The linen trade has experienced a rather quiet time during the month, and the business passed has been small, although a steady tone has pervaded the market. Jute has met an improved demand, and the business in this branch is a great improvement on that experienced during the past few months. Trade in flax has been of a very dragging character, and prices are quotably lower.

Carpets.—Business has steadily improved in nearly all branches of the trade, although prices are still, on the whole, unremunerative to the manufacturers. In the Brussels and tapestry departments looms are being fairly employed, and manufacturers of Royal Axminster are very busy. In rugs business has also improved. Prices are still unaltered, and they keep on a par with the past few months.

Lace.—The lace trade, on the whole, is in a fairly prosperous condition. The home business is the least satisfactory branch of the trade, but it is hoped that an improvement will presently be experienced The lower descriptions of laces and trimmings have met with the greatest demand. Curtains have met with a fair sale. The hosiery branch has been tolerably active.

The Wool Harvest in New South Wales.

The New South Wales wool harvest of 1882 has commenced, and already small quantities of the clip are being borne to the coast. It is probable that the total yield will be less than that of last year, although the returns of sheep show that there are more of those useful animals in the colony than were pastured in 1881. At the close of 1880, according to the stock inspector's reports, there were in the colony 35,398,121 sheep. At the close of 1877 there were 21,521,662. Thus it appears that in three years the stock increased over 13,000,000. In January, 1881, it was hoped that before the close of that year New South Wales would have over 40,000,000 sheep on her pastures. It was not to be. The seasons proved unpropitious in many respects, and the stock inspector's returns, obtained on January 1st of this year, furnish as a total only 36,190,000. This is the stock available for the shears. With regard to the quantity of wool likely to be obtained from this stock, it is at this stage almost impossible to furnish that which might be considered even an approximate estimate. Since the last return many of the sheep districts have suffered severely. Drought has been followed by frost. It may be said that large numbers of sheep have died from sheer starvation. Even now large quantities of "dead" wool are arriving in Sydney. A few districts have been better favoured; but, taken as a whole, the seasons between September of last year and the present have not been favourable to the production of wool. So heavy had been the losses of stock on some stations that it is quite possible that there are at present fewer sheep in New South Wales than there were last shearing time. Against this supposition there is the probability that a large proportion of the many large flocks which were travelling at the close of last year are not included in the inspector's returns. It is thought therefore that the incoming clip, if it be not more, will not be much less than the previous one. The 1881-82 clip is likely to make a total of wool delivered of about 164,000,000 lbs. The 1882-83 clip, assuming that it it is from over 36,000,000 sheep, should not be much less. The quality is likely to be lower. It may be anticipated that there will be but a very small proportion of the incoming clip washed. The extension of railways has afforded cheap and speedy transit, and the disposition of late years has been to send the wool to market, if for shipment, as speedy as possible. Bad roads and bad seasons will retard the present shearing. Few stations of the west and north-west have the supplies necessary. On the north-western line woolpacks have been on the road since last April, and are still some distance from their destination. Therefore, it is likely that the "rush" of wool to Sydney this year will not be so heavy as it was at the close of 1881.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH DECEMBER, 1882.

DESIGNED BY R. LORD.

JUTE TAPESTRY.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH DECEMBER, 1882.

FRANKLIN INSTITUTE LIBRARY

DESIGNED BY W. TAIT.

TOILET QUILT.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH DECEMBER, 1882.

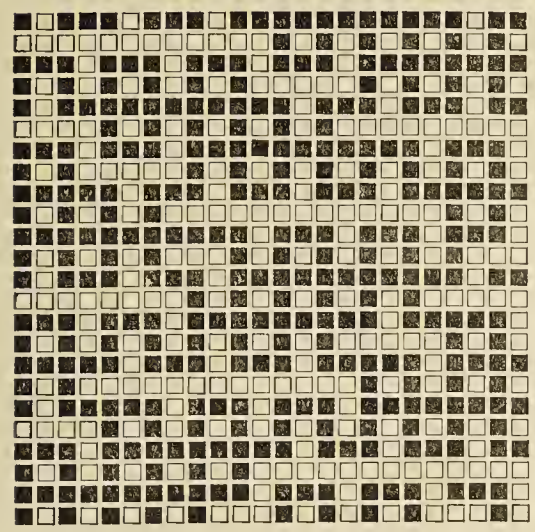
DESIGNED BY J. G. BOWINS.

SILK HANDKERCHIEF.

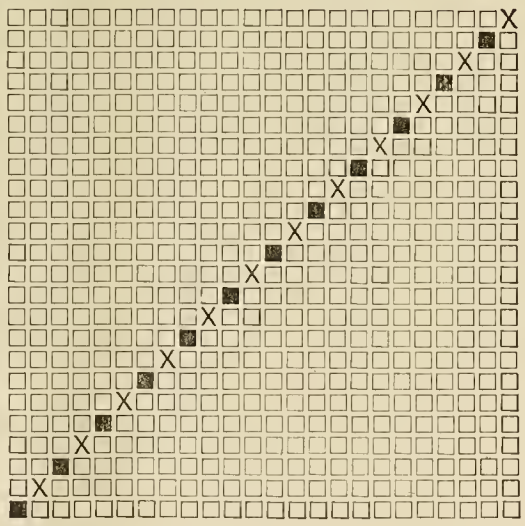
ORIGINAL DESIGNS

Fancy Woollens.

No. 23.



Design.



Draft.

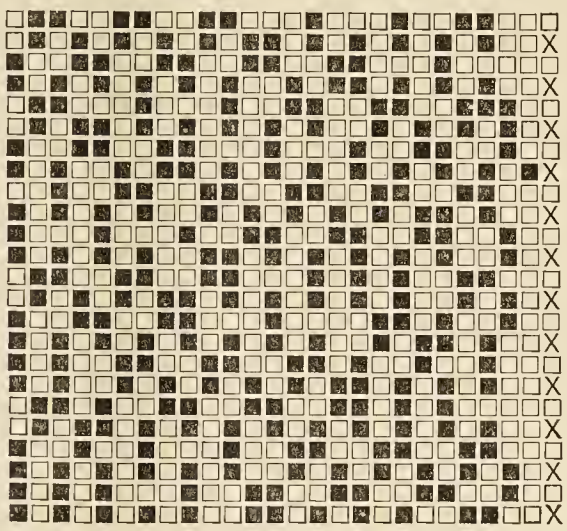
Draw the White threads on shafts marked X in Draft.

Warp: 1 thread White.
1 ,, Dark Blue
—
2 ,, in Pattern.

Warp Yarns:
White 35 skeins } or 8960 yds.
Dark Blue ,, ,, } in a lb.

Weft: Same as Warp, 35 skeins.
1 pick White.
1 pick Dark Blue.

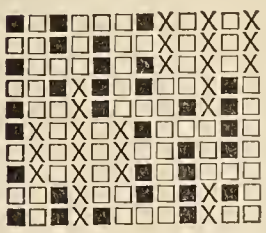
The White weft must be thrown in all the sheds marked X in the Pegging Plan.



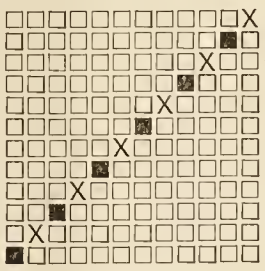
Pegging Plan.

Reed 20: 4 threads in a dent.
64 picks per inch.
70 inches wide in the loom.
56 inches wide when finished.
Clear finish.

No. 24.



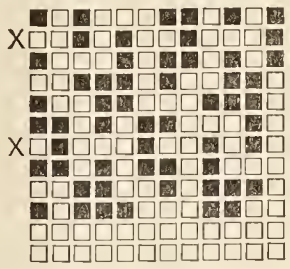
Design.



Draft.

Draw the White thread on the shafts marked X in Draft.

Warp: 1 thread White.
1 ,, Tan.
—
2 ,, in Pattern.



Pegging Plan.

Warp yarns: White 35 skeins } or 8060 yards in
Tan 35 skeins } a lb.

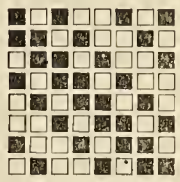
Weft: Same as Warp, 35 skeins.
1 pick White.
4 ,, Tan.
1 ,, White.
4 ,, Tan

The White must be thrown in the sheds marked X in the Pegging Plan.

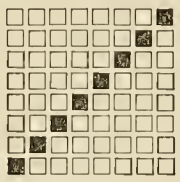
Reed 20: 4 threads in a dent.
64 picks per inch.
70 inches wide in loom.
56 inches wide when finished.
Clear finish.

Tweed for Suiting.

No. 25.



Pegging Plan.



Draft.

Begin with 2 Light Grey.

Warp: 2 threads Light Grey.
1 ,, Black.
1 ,, Bronze.
2 ,, Black and White Twist.
1 ,, Green.
1 ,, Black.
—
8 ends in pattern.

Warp Yarns: Light Grey single 2560 yards to the lb.
Black ,, ,, ,, ,, ,,
Bronze ,, ,, ,, ,, ,,
Green ,, ,, ,, ,, ,,
Black and White Twist 2560 yards ,, ,,
{ Black 5120 } Twisted.
{ White 5120 }
12 turns per inch.

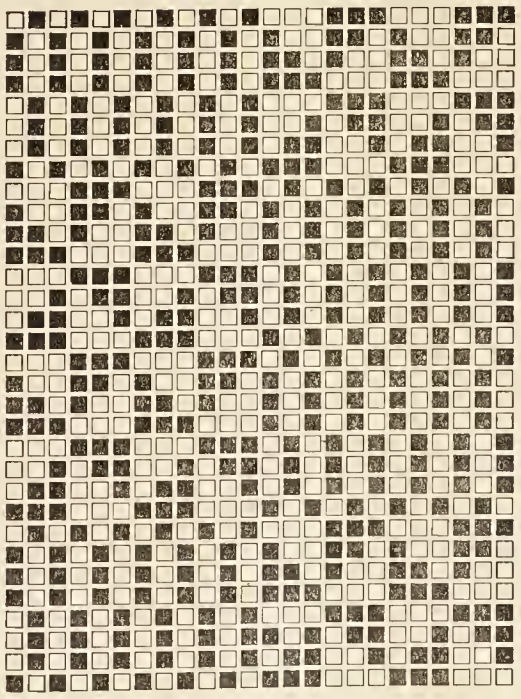
Weft: Light Grey single 2560 yards 2 picks.
Black single 2560 yards 2 picks.

Also weave some all plain colours say—
Light Grey, Middle Brown, White, Lavender, Black, &c
Single yarns 2560 yards. 24 picks per inch.

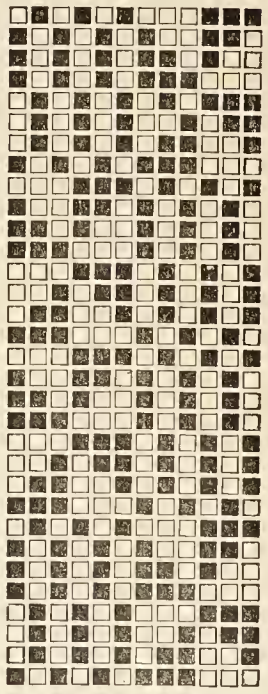
11 Reed: 2 threads in a dent.
66 inches wide in the loom.
56 inches wide finished.
Clear finish.

Worsted Coatings.

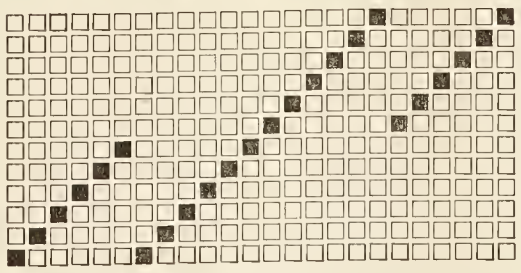
No. 26.



Design.



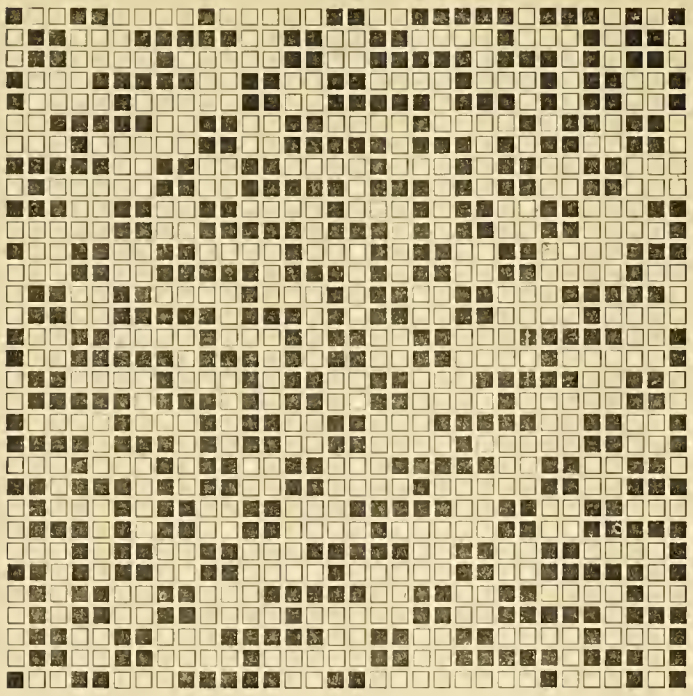
Pegging Plan.



Draft.

No. 26 is a Check, and is a 24 end pattern drafted to weave with 12 shafts.

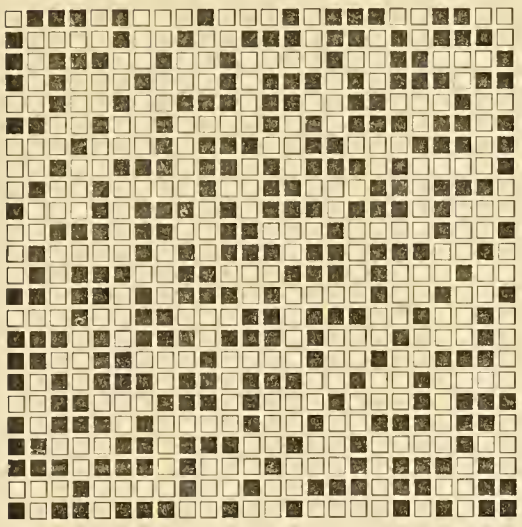
27



Design.

No. 27 is a Diagonal pattern of 32 shafts loomed straight gate over.

No. 28.



Design.

No. 28 is also a Diagonal pattern, but of 24 shafts loomed straight gate over.

The Bradford Exhibition.

THE exhibition in connection with the Technical School, Bradford, which has been open more than five months, was formally closed on Saturday, the 3rd inst. The Chairman of the Committee briefly addressed the crowded assembly which had gathered, and congratulated all concerned in the exhibition on the very successful ending of the project, which had far eclipsed the most sanguine expectations of any of its promoters. The surplus, after paying all expenses, amounts to nearly £10,000, which, it is proposed, should be devoted to the formation of an endowment for the school, so that in the future the work that had to be carried on should not in any way be crippled for the want of funds

The following is the official list of the jurors' awards in the various classes of interest to the textile trades :—

Machinery.—Gold Medals.—W. and J. Galloway and Sons, Manchester, steam-engines; Crossley Bros., Limited, Manchester, gas engines; the Kirkstall Forge Co., Leeds, shafting; Hulse and Co., Manchester, tools; Greenwood and Batley, Leeds, tools; Chatwood's Safe and Lock Co., Limited, Manchester, safes and locks; Bolckow, Vaughan and Co., Middlesborough, cast steel.

Silver Medals.—J. and W. M'Naught, Rochdale, steam-engines; Thwaites Bros., Bradford, steam-engines; Cole, Marchant and Co., Bradford, shafting; Perkins, Son and Barrett, Bradford, shafting; Thwaites Bros., Bradford, Root's blower and exhauster; Manlove, Alliott, Fryer and Co., Nottingham, exhausters and extractors; Hopkinson Bros. and Co., Bradford, brass work; Birkett and Robinson, Cleckheaton, brass work: Dowson Economic Gas Co., London, gas appliances; Darling and Sellers, Keighley, tools; Henry Milnes, Bradford, tools; William Asquith, Halifax, tools; Arundel and Co., Manchester, indicators; E. Green and Son, Wakefield, economisers; W. and J. Galloway and Sons, Manchester, boilers; Leeds Forge Co., Limited, model for the principle of a boiler; Chubb and Son, London, locks and safes; Milner Safe Co., London, safes and locks; F. Leroy and Co., London, non-conducting composition for boilers; Hudswell, Clarke and Rodgers, Leeds, wrought-iron split drums; S. Haley and Sons, Cleckheaton, card-making machinery; J. Yates and Sons, Cleckheaton, card-making machinery.

Bronze Medals. — Manlove, Alliott, Fryer and Co., Nottingham, steam-engines; Alfred Yates, Halifax, steam-engines; S. Clayton and Co., Bradford, gas-engines; W. B. Haigh, Oldham, gas-engine; Charles Haigh, Bradford, brass work; Joseph Shaw, Lockwood, near Huddersfield, brass work; Boult Bros. and Co., Liverpool, brass work; J. J. Royle, Manchester, brass work; J. Stott and Co, Oldham, gas appliances; John House, Bradford, wrought-iron split drums.

Looms, Loom Appliances, &c.—Gold Medals.—G. Hattersley and Sons, Keighley, looms; D. Sowden, Bradford, looms; J. Leeming and Sons, Bradford, looms; Platt Bros. and Co., Oldham, spinning and twisting; J. and W. McNaught, Rochdale, wool washing; the Students of the Technical School, illustrated design

Silver Medals:—Briggs Priestley, Bradford, looms; A Flather, Bradford, jacquard machines; Hacking and Co., Bury, looms; J. Dixon and Sons, Steeton, bobbins; J. Hardacre, Leeds, temples; J. Ingham and Sons, Thornton, Bradford, shuttles and pickers; J. B. Farrar, Halifax, spinning and twisting; Crighton and Sons, Manchester, wool opening machines; Platt Brothers and Co., Oldham, combing machines; Terry and Scott, Bradford, combing machines; Taylor, Holdsworth and Co., Leeds, combing machines; Platt Brothers and Co., Oldham, wool washing; Mitchell and Allison, Bradford, cloth roller; Dronsfield Brothers, Oldham, card mounting and card grinder machines; J. Yates and Son, Cleckheaton, cards; S Haley and Son, Cleckheaton, cards; Robinson and Co., Salford, singeing machines; Shackleton Binns, warp tying machine (made by Greenwood and Batley, Leeds).

Bronze Medals:—A. Pyrah, Bradford, jacquard cards; J. Parkinson, Bradford, temples; A. Kershaw, Queensbury, Bradford, reeds and healds; J. and T. Boyd, Glasgow, spinning and twisting; P. and C. Garnett, Cleckheaton, carding and wool opening machines; T. R. Harding and Son, Leeds, combing machines and appliances; Frerichs and Co., Bradford, knitting machines; William Harrison, Manchester, stocking and hosiery knitting machines; J. Gibson, Bradford, cloth roller; Hacking and Co., Bury, making-up machine; J. Stubbs, Manchester, singeing machine.

Leather Belting, &c—Gold Medals:—White and Son, Bingley; W. Laycock and Sons, Keighley.

Silver Medals:—Tullis and Son, Glasgow; Sampson and Co., London; Thomas Fleming, Son and Co., Halifax.

Bronze Medal:—J. and W. Birkby, Liversedge.

Dyes and Soaps. — Silver Medal. — Star Chemical Co, Brentford, chemical products, including dyes.

Bronze Medals.—Bryce and Rumpff, Bradford, chemical products, including dyes; Foster and Gregory, London, dyes. D. Salmond, Bradford, soft soaps.

Electrical Apparatus. — Gold Medals. — Yorkshire Brush Co.; National Telephone Co.

Silver Medals.—J. Davis and Co., Bradford; J. Tate, Bradford, electrical stop motion for machinery.

Bronze Medal.—T. and S. W. Cuttris.

Fabrics, Yarns, &c.—Gold Medals.—Lister and Co., Bradford, silks, plushes, velvets; Sir T Salt, Bart., and Co., alpacas, mohairs, cashmeres; H. Pease and Co, Darlington, all-wool cashmeres; J. Holdsworth and Co., Halifax, worsted damasks, reps, silk tapestries; Lister and Co., Bradford, spun silks; Mitchell and Shepherd, Bradford, lustre, mohair, and other dress fabrics; Tuberville, Smith and Co., London, Axminster carpet (designed by the late Sir Digby Wyatt); A. Mennier and Co., Paris, dyeing and finishing of fabrics; James T. Lishman, Bradford, design for dress fabrics; Scarborough Bros., Halifax, worsted and hosiery yarns; James Tankard,

Bradford, fine botany yarns; Mitchell and Shepherd, Bradford, mohair yarns; J. and W. Hodgson, Bradford, collective exhibit of yarns.

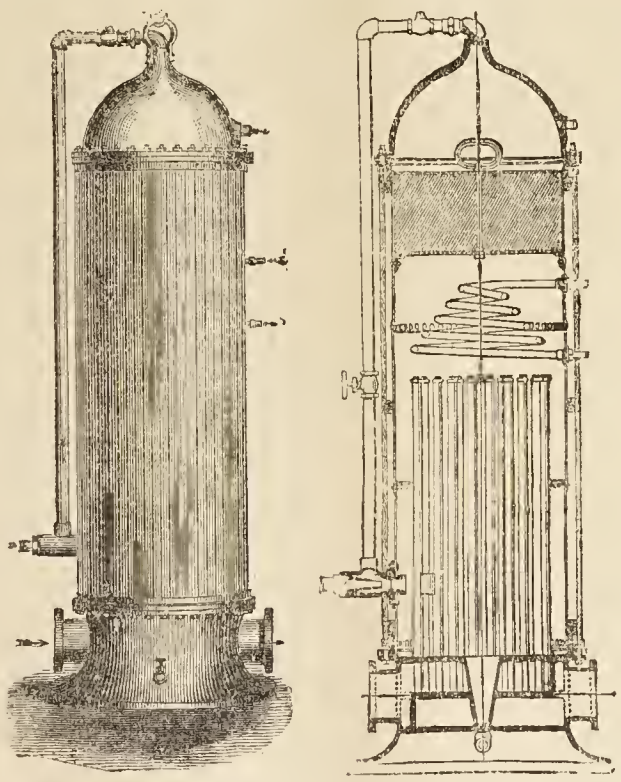
Silver Medals.—Scarborough Bros., Halifax, worsted coatings, dress goods, damasks, reps, &c.; J. Crossley and Sons, Limited, Halifax, carpets in various styles. G. Armitage, Bradford, specimens of dyeing and finishing of Bradford goods; John Beanland, design for dress goods; H. Pease and Co., Darlington, worsted coating yarns; W. Aykroyd and Son, dyeing silk and cotton yarns; Clayton, Marsden and Co, raw spun silk.

Bronze Medals.—Ibbetson and Son, Eccleshill, shirtings, &c.; J. G. Tiller, Manchester, cotton clothing; S. Smith, Bradford, specimens of dyed, milled and finished goods; James Wishart, Bradford, design for dress goods; Richards and Co., Bell Busk, sewing silks; W. W. Wood, Bradford, worsted wefts.

MACHINERY, TOOLS, &c.

Strong's Feed Water Heater.

We have pleasure in calling the attention of our readers to a patent feed water-heater and purifier, invented by Mr. George S. Strong. In a paper, read by the inventor at a meeting of the Franklin Institute, some valuable information was given as to the requirements of an effective feed-water heater, but as the paper is somewhat lengthy, we shall confine ourselves to that portion of it relating to the principles and details of the heater. Mr. Strong explained that his plan was to make a feed-water heater in which the water could be raised to a temperature of about 250°F, before entering the boiler. By using the heat from the exhaust steam the water may be raised to between 208° and 212°F. It has yet to be raised to 250°F.; and for this purpose, Mr. Strong saw the advantage that would be attained by using a coil of live steam from the boiler. This device does not cause any loss of steam, except the small loss due to radiation, since the water in any case would have to be heated up to the temperature of the steam on entering the boiler. By adopting this method the chemical precipitation, which would otherwise occur in the boiler, takes place in the heater; and it is only necessary now to provide a filter, which shall prevent anything passing that can possibly cause scale.



The two illustrations given, represent an elevation and a vertical section of the heater. Referring to the vertical section it will be noticed that the base, which is cast iron is divided into two parts by a diaphragm. The exhaust steam enters at the left of the base, passes up the larger tubes, which are fastened into the upper shell of the casting, returns by the smaller tubes, which are inside the others, and passes away at the right of the base. The inner tubes only serve for discharge. It will be seen at once that this arrangement, while securing great heating surface in a small space, at the same time leaves freedom for expansion and contraction, without producing strains. The free area for passage of steam is arranged to be one and a half times that of the exhaust pipe, so that there is no possible danger of back pressure. The wrought iron shell connecting the stand with the dome is made strong enough to withstand the full boiler pressure. An ordicasing, of wood or other material prevents loss by radiation of heat. The cold water from the pump passes into the heater through an injector arrangement, and coming in contact with the tubes mentioned above, is heated; it then rises to the coil which is supplied with steam from the boiler, and thus becomes further heated, attaining there a temperature of from 250° to 270° F., according to the pressure in the boiler. This high temperature causes the separation ofthe dissolved salts, and on the way to the boiler the water passes through the filter shown immediately under the dome, becoming, thereby, freed from all precipitated matter before passing away through the dome to the boiler. The purpose of the injector and of the pipe passing outside the shell is to cause a continual passage of air or steam from the upper part of the dome to the lower part of the heater, so that any precipitate carried up in froth, may be again returned to the under side of the filter, in order, more effectually, to separate it, before any chance occurs of its passing into the boiler. The filter consists of wood charcoal in the lower half and bone black above, firmly held between two perforated plates. After the heater has been in use for from three to ten hours, according to the nature of the water used, it is necessary to blow out the heater, in order to clear the filter from deposit. To do this a cock, which is situated at the base of the heater, is opened, and the water is discharged by the pressure from the boiler. The steam is allowed to pass through the heater for some little time, in order to clear the filter completely. After this operation all is ready to commence work again. By this means the filter remains fit for use for months without change of the charcoal.

Where a jet condenser is used, either of two plans may be adopted. One plan takes the feed-water from the hot well and passes the exhaust from the feed pumps through the heater, using at the same time an increased amount of coil for the live steam. By this means a temperature of water is attained high enough to cause deposition, and at the same time to produce decomposition of the oil brought over from the cylinders. The other plan places the heater in the line of exhaust from the engine to the condenser, also using a large amount of coil. Both these methods work well. The writer sometimes uses the steam from the coil to work the feed pump; or, if the heater stands high enough, it is only necessary to make a connection with the boiler, when the water formed by the condensation of the steam runs back to the boiler, and thus the coil is kept constantly at the necessary temperature.

Messrs. Sterne and Co., Crown Iron Works, Glasgow, are the sole makers of Strong's feet-water heater, and we have no doubt they will be happy to furnish any additional information which our readers may require.

A New Jute Machine.

It is always a pleasure to us to draw attention to any new invention which may be of benefit to textile manufacturers, and we have no doubt that a description of the jute machine recently invented by Mr. Smith, of St. Louis, will be of great interest to our numerous readers. The principal features of the machine are an apron, on which the jute stalks are placed; behind this two cylinders seven inches in diameter and 36 inches in length; behind these two fluted cylinders of about the same length and diameter; then revolving combers and scrapers that separate the wood from the fibre; then, parallel, a brush apron that brushes the fibre straight and smooth. From the interior of the revolving decorticator or scraper a spray of water is constantly thrown on the broken fibre as it passes through the fluted rollers. The jute stalks and branches placed upon the apron are passed about half their length into the machine, and then the rollers, by a reversed action, bring them back, the apron is reversed and the other ends of the stalks are worked in the same manner; and then the fibre is brought back upon the apron and taken off to undergo the process of rotting. This process is merely to remove the gummy matter from the fibre; and it gives it a softer feeling to the touch and completely separates the fibres from each other. It also removes the green colour and leaves it white, which makes it more marketable. It takes from ten to fifteen days to rot the fibre properly; then it is in a marketable shape after it is dried. The invention simplifies the process of preparation. Heretofore water-rotting required ponds for the submersion of the unwieldy mass of stalks. But Mr. Smith's machine so greatly reduces the bulk that, the fibre separated from the wood, can easily be treated in vats. Water seems to be the most economical solvent of the gum which holds the jute fibres together. Though chemistry may yet invent more effective methods, at present the cheapest way of separating the fibres is an immersion of the jute in vats of hot water. This process, impracticable when the whole stalks are handled, is readily feasible when only the fibre is treated. Ponds cannot be heated, but vats can be, and an equable temperature of any required degree can be maintained. Mr. Smith's machine, we are told, possesses several strong points, among which are the following:—1. It may be used in the jute field and there separate the fibre from the woody portions of the stalk. 2. It works up the butts complete, the same as the fibre in the middle of the stalk. 3. It leaves the fibre straight and free from snarls, and well separated from woolly matter. 4. There is but little waste or loss of fibre in the operation. 5. The work can be done with satisfactory rapidity. Mr. Smith has had much experience in preparing flax for market, and has turned that experience to fine account in the production of his jute machine.

The Manchester Technical School.

A MEETING of the General Committee and others interested in the adaptation of the Manchester Mechanics' Institute as a Technical School, was held recently in the Town Hall to receive the report of the Executive Committee appointed on the 9th August. The result, at which the Executive Committee has arrived, is in effect to recommend the organisation of a Technical School in accordance with the following scheme: (*a*) A school of applied science, with especial reference to the building trades, mechanical engineering, bleaching, dyeing, and printing, cotton manufacture, &c.; (*b*) a school of art and design as applied to house decoration, textile fabrics, furniture, &c.; (*c*) a school of commerce. The school is to be open for day and evening students, both male and female, and such preparatory courses of study for day pupils, under fourteen years of age, are to be arranged as the Council

may, from time to time, deem necessary. The Council is to have "full power to vary the organisation from time to time according to special needs, and to cause such additional subjects to be taught as it may consider expedient." The Committee also recommends (1) The provision of suitable machinery for the adequate illustration of the subject of mechanical engineering, and for some amount of workshop practice. (2) The provision of looms and appliances for the study and practical application of design to the textile fabrics manufactured in the district. (3) The provision of suitably equipped lecture rooms, and the furnishing of a suite of rooms for the practice of machine and building drawing, and construction; and (4) The extension of the present library of scientific and technical books, and the establishment of a technical museum.

In the course of the meeting several very interesting speeches were delivered by gentlemen taking a prominent interest in the movement, and a resolution to the effect that "the report, of the Executive Committee for the adaptation of the Mechanics' Institution as a Technical School, be received and adopted," was passed unanimously, as was also the following resolution: "That the Executive Committee be re-appointed for the purpose of raising the funds necessary to give effect to the scheme, for further consideration and adoption of the rules, and to arrange with the directors for the transfer of the institution into the charge of the new governors" The cost of teaching in the school is estimated at about £1,000 per annum. It is expected that the income from students' fees, and from grants in successful instruction from the Science and Art Department, and the City and Guilds of London Institute, will realise at least £1,000 per annum. It is estimated that nearly £1,800 will be required for additional appliances, and for alterations in order to carry out the scheme in each department. Towards this the City and Guilds of London Institute have promised a grant of £100, and for maintenance a yearly subvention of £200 for three years. The committee hopes that in addition to the funds needed for establishment, the new governors will be entrusted with annual subscriptions for four years of about £1,000, after which they are sanguine the school will be self-supporting. The project of the Manchester Technical School may now be said to be fairly launched, and with the best prospects of success.

Our readers must not imagine that nothing has been done in Manchester up to the present time in the way of technical education. For some time past classes have been held at the Mechanics' Institute, and the following subjects, amongst others, have been successfully taught:—Chemistry, organic and inorganic, with lecture courses and laboratory practice. Bleaching, dyeing, and printing, with lecture courses and laboratory practice. Cotton manufacture, lecture courses on preparation, spinning, weaving, and designing, as applied to textile fabrics. Telegraphy and telephony, with lecture courses and laboratory practice in magnetism and electricity, and sound, light, and heat. Botany and physiology, with lecture courses and laboratory practice. Design for calico printers. The various subjects included in the curriculum of a School of Art (freehand, model, perspective, and geometrical drawing, and the advanced subjects of the third grade). Subjects of commercial knowledge: Modern languages (French, German, and Spanish), bookkeeping, phonography, commercial correspondence, geography, history, arithmetic. We would urge upon the governors of the new organisation the necessity of giving the greatest amount of attention to instruction in designing for calico printing. It is a well-known fact that at least three-fourths of these designs come from Paris, the reason being that French designs are so greatly superior to English ones. But there is no reason why, in the future, this state of things should not be reversed. With a thorough system of training for the students in this department, both in design and colour, the Manchester calico printers ought, ere long, have the satisfaction of being able to supply their wants at home.

On Saturday, the 2nd inst., the following Oldham cotton spinning companies took stock for the last three months, with results as follows:—Central Spinning Company, Limited, 55,796 spindles; gain, £900, besides writing off a bad debt of £200; dividend, 1s. 9d. per share, or 11¾ per cent. per annum. Shaw Spinning Company, Limited, 69,970 spindles; gain, £555; dividend of 1s. per share of £3 10s. paid up.

ODDS AND ENDS.

The *Bradford Chronicle* states that, in consequence of the difficulties of business, seven old-established firms in the Bradford trade will either totally or partially relinquish business at Christmas.

* * * *

One or two country gentlemen, it is understood, are taking active steps to bring about an exhibition of home-made silk goods in London, and such an event cannot fail to give a great impetus to the silk trade not only of Macclesfield, but the country generally.

* * * *

The Executive Committee of the Amsterdam International Exhibition have enlarged the building for this Exhibition, and an increased space is now allotted to the British section. An extension of time for applications has also been accorded.

* * * *

The Worcestershire Exhibition of Arts and Industries has been so successful that a few statistics concerning it may be useful, in case of others seeing fit to follow the example of making the county an unit for such a purpose. The Exhibition was first mooted in February; and the guarantee fund, which was fixed at the minimum sum of £2,000 rose rapidly to upwards of £6,000. The collection was formally opened on the 18th July, and closed on the 18th October The number of visitors during the three months was upwards of 220,000. The receipts will exceed £10,000, and the expenditure, it is to be hoped, will not exceed £8,000, leaving £2,000 for application to the purposes of art, science, literature, and industry, in the county and the city of Worcester.

* * * *

After the serious depression which has so long prevailed in the Macclesfield silk district, it is reported that a decided improvement in trade has recently taken place. There is a better demand for all classes of goods, but more especially in the plain department, and weavers are just now particularly busy. Prices, however, are not very remunerative for manufacturers, and complaints are still made by the weavers as to the low rate of wages at which they are paid. In the figured branch a good deal of activity is being displayed. Should any further demand for goods be made, manufacturers will be at a loss to find operatives, owing to the large number who have left the district during the depression for America and other parts. The orders which have been given during the last week or two are of a very encouraging description.

NOTICE TO ADVERTISERS.

Advertisements will be inserted at the following rates; (in all cases prepaid): *Twenty words, One Shilling; Sixpence* for each additional *Twelve words* or part of *Twelve*. The address being counted as part of the Advertisement.

Displayed Advertisements according to arrangement.

Mercantile Assistants, &c., Want Places.

WANTED, by a large American Carpet Manufacturing Firm, a HEAD DYER. Must be thoroughly competent. Forward particulars to Brooke, Simpson and Spiller, Atlas Works, Hackney Wick, London, E.

Mills, &c.

RADNORSHIRE.—The KNIGHTON SILURIAN CLOTH and WELSH FLANNEL MILLS.—To be Sold by private treaty, or Let, all those valuable Silurian Cloth and Welsh Flannel Mills, situate at Knighton, Radnorshire, together with the goodwill and extensive trading connection, and also the valuable machinery therein. The works and machinery were designed by Sir William Fairbourne and the late Mr. John Mason, and are of first class construction. The manufactory is worked by combined water and steam power at a great advantage, and is situate in a wool-producing district with the London and North-Western Railway close to the works. The goods manufactured are extensively known and appreciated. For further particulars and to treat, apply to Mr. Hugh Shaw, Auctioneer and Valuer, 2, Clegg Street, Oldham, where photograph of the premises, &c., may be viewed or sent.

TO BE LET or SOLD, by Private Contract—
PROVIDENCE MILL. Cleckheaton.
One ROOM, 16 yards by 16 yards 1 foot.
One ROOM, 16 yards by 16 yards 1 foot.
One ROOM, 21½ yards by 16 yards 1 foot.
One GARRET, 69 yards by 8 yards.
To a respectable tenant a very low rent would be accepted. Apply W. J. Cockroft, Providence Mill, Cleckheaton.

Partnership.

A Woollen Manufacturer, with a large mill, is open to treat for PARTNERSHIP with a merchant or gentleman having connection amongst the wholesale clothiers. Address Messrs. Snowdon and Meredith, Solicitors, 13, East Parade, Leeds.

TUTE LIBRARY.

THE GAZETTE.

Adjudication of Bankruptcy.

Ramwell William, 5, Cross Street, Manchester, and Bolton, solicitor, and trading as William Ramwell and Co., at Hindley, cotton spinner and doubler; also trading as the Vulcan Iron and Hoop Co., Ardwick, near Manchester.

Liquidations by Arrangement or Composition.

Briggs John Wood and William Henry Briggs, trading as Briggs Brothers, Thornton Road and Swaine Street, Bradford, late Damen's Mill, near Keighley, Sun Street, Keighley, stuff manufacturers.
Farrar Abraham, Stansfield Road, Todmorden, Yorks, cotton manufacturer.
Keighley Gilbert, Low Mill, Morton, Bingley, and Brook Street, Bradford, worsted spinner and manufacturer.
Wrigley Samuel, trading as Samuel Wrigley and Co., Shaw Road and Bottom-o'-th'-Moor, Oldham, cotton spinner.
Street Joe Roberts, Dewsbury, and Staincliffe, near Dewsbury, shoddy manufacturer, and Wellington Bridge, Leeds, woollen manufacturer.
Allott Alfred, Frederick Thomas Allott, and Charles Allott, trading as Allott Bros., Uppermill, Saddleworth, Yorks, dyers and finishers.
Chadwick James George and William Chadwick, jun., trading as William Chadwick and Sons, Burley, and Quebec Street, Leeds, woollen manufacturers.
Morgan David, Wright Street, Hull, dyer.
Goad Frederic William, Weekday Cross and Marian Villas, both Nottingham, lace and frilling manufacturers.

Sequestrations.

Crawford Brothers, Buchanan Street, Glasgow, calenderers and packers, and William S. and Frederick M'K. Crawford, the partners and as individuals.
Alexanders and Co., Weensland Mills, near Hawick, spinners, &c., and Charles Jameson Alexander, Hawick, manufacturer, and Jawcraig, Slamannan, and 5, Port Hopetoun, Edinburgh, coalmaster or proprietor, and Ebenezer Alexander, and Henry Scott Moffatt, both Hawick, manufacturers, the partners and as individuals.

Dividends.

Hall Miles (Bankrupt), Leeds, and Gildersome, cloth manufacturer. Dividend 1d.; C. T Hewson, 14, East Parade, Leeds
Craven Franklin H. (Bankrupt), Pudsey, Yorks, stuff manufacturer. 2nd and final dividend, 2d.; on and after November 23rd. B. Musgrave, Bradford, accountant.
Craven Phineas (Bankrupt), Pudsey, Yorks, stuff manufacturer. 2nd and final dividend, 0¼d.; on and after November 23rd. B. Musgrave, Bradford, accountant.
Woodward Benjamin, trading as Benjamin Woodward and Co. (Liquidation), Kidderminster, carpet and rug manufacturer. 1st and final dividend, 7s. H Preen, 5A, Mill Street, Kidderminster.
Baybut Fairhurst, trading as F. Baybut and Co. (Bankrupt), New Cannon Street, Manchester, fustian manufacturer. 1st dividend, 10s. T. W. Handley, 5, Booth Street, Manchester.

Trustees Appointed.

Carr Thomas (Liquidation), Burnley, cotton manufacturer. Trustee, J. Rawlinson, Burnley, accountant.
Carter Jeremiah and Thomas Carter, trading as Jeremiah Carter and Co. (Liquidation). Elland, Halifax, woollen manufacturers. Trustee, F. Foster, Halifax, accountant.
Gregson William H. (Liquidation), Over Darwen, cotton manufacturer. Trustee, T. Hindle, Over Darwen, accountant.
Lonsdale Peter and Henry Lonsdale, trading as Thomas Bolton and Co. (Liquidation). Blackburn and Southport, cotton spinners. Trustee, W. Hutchinson, Kennedy Street, Manchester, accountant.
Smith Thomas (Liquidation), Halifax, woolstapler. Trustee, J. D. Taylor, Halifax, accountant.
Crossley William T., William Hibbert, and Frederick W. Dawson, trading as Crossley, Hibbert and Co. (Bankrupt), Rainow and Manchester, bleachers. Trustee, G. Whitt, King Street, Manchester, accountant.
Bernacchi Diego (Liquidation), Leicester, silk yarn agent. Trustee, E. Roberts, Leicester, accountant.
Heginbottom James (Liquidation), Dalton Street, Stockfield Road and Stockfield Mill, both Chadderton, cotton spinner. Trustee. R. Wrigley, Oldham, accountant.
Shorrock Eccles, Ralph S. Ashton, and William S Ashton, trading as Eccles Shorrock, Brothers and Co. (Liquidation), Over Darwen and Tockholes, cotton spinners. Trustee, J. Adamson, 5, Norfolk Street, Manchester, accountant.
Thompson James and James T. Haddon, trading as James Thompson and Co. (Bankrupt), Bradford, wool merchants. Trustee, B. Musgrave Bradford, accountant.

Dissolutions of Partnership.

Aceme Mensurator Co., Fountain Street, Manchester, manufacturers. Debts by Hugh Arthur Gorton.
Alcock R. and S, Hudcar, Bury, cotton spinners and manufacturers. Debts by Samuel Henry Alcock.
Bradford and Collins, Wormwood Street, carpet and floorcloth warehousemen. Debts by John Collins
Brunt J. and J., Macclesfield, silk men and silk waste dealers.
Cunningham and Hinshaw, 1, Old Hall Street, Liverpool, cotton brokers. As regards Robert Hinshaw.
Eden and Crowe, Long Eaton, Derbyshire, lace manufacturers. Debts by Samuel Eden
Ellis H. and F., Batley Carr Mills, Dewsbury, woollen manufacturers and letters of machinery. Debts by Frederick Ellis.
Gawthorp William and Co., Marshall Mills, Bradford, wool combers.
Kay Robert and Sons, Salford, Bunkers Hill, Prestwich, and Booth Street, Manchester, calico printers and finishers. As regards Jacob Kay.
Midwood G H. and Co, Ardwick, near Manchester, and Faulkner Street, Manchester, manufacturers of coloured and fancy goods, dyers and calico printers. As regards George Harrison Midwood.
Milne and Stansfield, Oldham, cotton spinners.
Oliver Thomas and Sons, Bollington, near Macclesfield, cotton spinners and thread manufacturers. Debts by Thomas Oliver.
Johnson and Leach, Leeds, flock and mungo merchants. Debts by Richard Charles Leach.
Jones, Evans and Co., Newtown, Montgomeryshire, woollen manufacturers and flannel merchants. Debts by Thomas Parry Jones
Part and Clayton, trading as the Gore Brook Dyeing and Printing Co., and the Nutsford Vale Colour Co, Nutsford Vale, West Gorton, Manchester, dyers, printers, and colour manufacturers.
M'Queen Colin and Co, Glasgow, muslin manufacturers. Debts by Colin M'Queen, who continues the business.
Wilde A. and Co., Oxford Road Mill, Macclesfield, silk manufacturers.
Barber and Ingham, Romiley, Cheshire, and Manchester, cotton spinners and yarn agents.
Bardsley G. W. and Son, Bolton, cotton waste dealers. Debts by Walter Edmund Bardsley.
Birchall J D. and Co., Leeds, woollen manufacturers and merchants. As regards Magnus Maurice Warburg.
Thompson R. and Son, Hutchesontown, Glasgow, cotton spinners, &c.

Bills of Sale.

Slater Leonard, 27, Pear Tree Road, Derby, tailor	£40	0	0	&c.
Skea Michael, Hebbern Quay, draper, purchase money	£298	8	9	
Shipway T., 20, Tavistock Crescent, Westbourne Park, tailor	£62	0	0	&c.
Beswick S., 71, Arkwright Street, Bolton, cotton waste dealer, &c.	£71	0	0	
Firmin G B., Galley Hill, Swanscombe, merchant tailor. &c.	£210	0	0	
Kerr J., Sutherland Place, Wolverhampton, draper, &c., absolute sale	£120	0	0	
Walther H., Bower Street, Corporation Street, Sheffield, tailor	£72	0	0	&c.
Elen E., 1, Winchester Street, Pimlico, linen and woollen draper	£34	10	0	
Crump A. E., 159, Blackstock Road, Finsbury Park, draper, &c.	£195	0	0	
Crump Jesse Caroline, 159, Blackstock Road, N., draper, &c.	£195	0	0	
Olver R., Sinclair Gardens, West Kensington, tailor, &c.	£130	0	0	
Paterson T. J., St. Mary Street, Southampton, tailor, &c.	£50	0	0	&c.
Peace G. H., Clayton West, woollen cloth manufacturer, &c.	£87	0	0	&c.
Thornton S., Cliffe Terrace, Manningham, cotton warp salesman	£41	0	0	
Moore F. J, Rectory Road, Stoke Newington, silk agent	absolute sale			
Merrill J., 382, Shalesmoor, Sheffield, hosier and draper	£130	0	0	&c.
Nicholas S. (and wife), 9, Creswell Street, Everton, draper	£42	17	6	&c.
Scale B., Erskine Villas, Werter Road, Putney, upholsterer, &c	£170	0	0	&c.
Shuttleworth J., 40, Swadford Street, Skipton, draper	£722	0	6	&c.
Kelsall F., Keeling's Lane, Hanley, draper. &c.	£70	10	0	
Mills J. F., Bury New Road, Bolton, cotton waste dealer	£48	0	0	&c.
Murray Richard, 120, St. Mary's Road, Southampton, tailor	£40	10	0	&c.
Mellor J. and R C., Macclesfield, silk dyers	£250	0	0	&c.
Martin R., 2, Mandale Road, South Stockton, tailor and draper	£50	0	0	
Charlton E. R., Shepherd's Bush, drapers' buyer, &c.	£130	0	0	
Papineau C R., Hallfield Road, Bradford, aniline dye agent	£24	0	0	
Parry E., 468, Mill Street, Liverpool draper	£40	0	0	&c.
Lloyd J. G, 38 and 39, Worcester Street, Wolverhampton, haberdasher	£260	0	0	&c.
Hawgood C. S, Clarendon Road, Nottingham, clothier	£300	0	0	&c.
Nicholas S. (and wife), Creswell Street, Everton, Liverpool, draper	£47	17	6	&c.
Jones J., Felinuchaf, Carnarvon, woollen manufacturer, mortgage	£160	0	0	
Haigh, Ainley and Rowland, Salendine Woollen Works, Lindley, near Huddersfield, manufacturers of worsted coatings	£100	0	0	&c.
Chappell F., Ossett, Wakefield, extractor of wool and waste dealer	£14	5	0	&c.

PATENTS.

Specially compiled for "The Journal of Fabrics and Textile Industries" by G. G. M. Hardingham, C.E., Fellow of the Institute of Patent Agents, 191, Fleet Street, London, E.C.

Applications for Letters Patent.

		No.
Apparatus for "slaying warps." R. L. Hattersley and W. Greenwood, Keighley	18th Nov.	5487
Bobbins. E. Tweedale, Accrington	31st Oct.	5175
Breaking, scutching, &c., fibrous materials. J. Shinn, Philadelphia, U.S.A.	2nd Nov.	5232
Buffing straps for looms. T. H. Brown, Manchester	6th Nov.	5281
Bobbins. J. Clayton, Bradford	6th Nov.	5286
Bleaching, &c. J. Gibson, Jun., Mottram, and J. Platt, Salford	8th Nov.	5330
Bleaching fibres. J. A. Graham, 66, Colman Street, E.C.	10th Nov.	5336
Bleaching, mordanting, and dyeing cotton. J. C. Mewburn, (A. Bozzi, Paris)	17th Nov.	5471
Combing wool, &c. F. Illingworth, Bradford	4th Nov.	5263
Combing machinery. J. H. Whitehead, Leeds	7th Nov.	5319
Cop winding machinery. J. Place, Leeds.	9th Nov.	5348
Dyeing vegetable textile materials. W. E. Gedge, (T. Richard, Paris)	20th Nov.	5513
Finishing machinery. J. Littlewood, Newsome, near Huddersfield	9th Nov.	5354
Floor cloths and wall coverings and similar fabrics, and in machinery employed. S Hawksworth, Scarborough	17th Nov.	5472
Looms. J. F. Brown, Glasgow	7th Nov.	5306
Looms. T. Blackhurst, Preston	7th Nov.	5311
Lace machines. L. Marceuil, Boulevard St. Dennis, Paris	11th Nov.	5382
Lace edging. R. J. S. Joyce, 18, Aldermanbury, E.C.	14th Nov.	5434
Looms. G. S. Snowden and O. Ball, Bradford	17th Nov.	5475
Looms. C. Keighley, Burnley	25th Nov.	5608
Mules for spinning and twisting fibres. J. E. Heppenstall, Milnsbridge	17th Nov.	5478
Mechanism applicable to tentering, stretching, &c., machines. J. Ashworth, Rochdale	25th Nov.	5603
Manufacture of sewing silk and other thread. W. Trafford, Leek	24th Nov.	5589
Piled fabrics and method of weaving. J. Holt, Bolton	27th Nov.	5630
Reeling thread. W. R. Lake (J. M. Grant, Hartford, Conn., U.S.A.)	7th Nov.	5320
Removing burrs, &c., from wool. A. J. Boult (F. Müller, Döbreen, Hanover)	13th Nov.	5401
Spinning, doubling, and twisting. E. Rushworth, Idle, Leeds	1st Nov.	5222
Spinning, doubling, and twisting. H. B. Barlow (E. C. A. Mason, Paris)	3rd Nov.	5245
Shuttles. F. O. Schmidt, Berlin	13th Nov.	5413
Spindle mountings of spinning machinery. R. N. Cottrill, Bolton-le-Moors	14th Nov.	5439
Spinning, doubling, and twisting. J. B. Dewhirst (T. H. Dewhirst and R. Cornthwaite, Skipton)	16th Nov.	5464
Spindles for spinning frames. D. Skeoch, Stewarton, Ayr	27th Nov.	5620
Treating fibrous substances. J. A. Graham, 66, Colman Street, London	10th Nov.	5365

Grants of Provisional Protection for Six Months.

4666	4682	4716	4720	4722	4724	4784	4801
4849	4851	4856	4864	4867	4882	4916	4918
4927	4959	4965	4979	4985	4994	5007	5009
5040	5049	5063	5085	5118	5146	5175	5179
5222	5232	5245	5281	5286	5291	5297	5306
5311	5319	5330	5354	5360	5366	5382	5408

(All of 1882)

Notices to Proceed.

(Notice of opposition to the Sealing of a Patent must be given within Twenty-one days of the Notice to Proceed being advertised in the Commissioners of Patents Journal.)

Combing machinery. J. W. Bradley and J. Wood, Bradford	30th June	3088
Carding machines. C. A. Day (J. Barker, Philadelphia)	22nd July	3494
Doubling and winding machinery. John and James Horrocks, Manchester	21st Sep.	4500
Filling in fibrous substances on pattern cards. W. Greenwood, Halifax	6th July	3196
Ladder tapes for blinds. T. French and J. Monks	4th July	3140
Looms. W. Buckley, Delph, and J. Hollingworth, Dobcross	6th July	3210
Lace and braid machines. F. E. A. Busche, Schweln, Germany	14th July	3357
Looms. R. L. Hattersley and J. Hill, Keighley	18th July	3408
Looms. T. Singleton, Darwen	27th July	3566
Measuring machine for fabrics in rolls. J. Darling, Glasgow, and J. Darling, Schotts	11th July	3285
Pickers for looms. E. Booth, Manchester	10th July	3259
Preparing and dressing waste silk. S. C. Lister, Manningham	4th Aug.	3715
Pressing fabrics. J. Burras and W. Renton, Leeds	30th Aug.	4139
Producing lint from new flax fibre. G. W. von Nawrocki (M. Salomonson, Bielfield, Germany)	12th Oct.	4856
Ring spinning and winding. E. Clark, Todmorden	8th Sep.	4282
Reeling thread, &c. W. R. Lake (J. M. Grant, Hartford, Conn., U.S.A.)	7th Nov.	5320
Spinning and twisting. J. Myers and B. Berry, Bradford	10th July	3261
Stitching machines. B. Hayne, Nottingham	21st Sep.	4499
Tentering machines. J. Ashworth, Rochdale	8th July	3239
Tape ladders. J. Carr, Hulme, Manchester	8th July	3242

Patents Sealed.

2262	2292	2386	2448	2463	2469	2481	2483
2510	2543	2566	2634	2795	3087	3151	3668
3672	3810	3904	3962	4113	4501	(All of 1882.)	

Patents on which the Stamp Duty of £50 has been paid.

Henry Illingworth, of Bradford, "Improvements in apparatus employed in washing wool and other fabrics."	8th Nov., 1879	4552
George Little, of Oldham, and Thomas C. Eastwood, of Bradford, "Improvements in machinery for combing fibres."	7th Nov., 1879	4545
Joseph Clark, of Greenfield, "A new and improved process of dyeing cotton fabrics and yarns, or mixed cotton or woollen fabrics of a black colour."	13th Nov., 1879	4632
William Campion, Sen., of Nottingham, "Improvements in machinery and apparatus to be employed in the manufacture of close or open fabrics."	21st Nov., 1879	4736
Thomas Coltman, of Leicester, and J. Andreas Frerichs, of Bradford, "Improvements in machinery and apparatus to be employed in producing warp fabrics."	22nd Nov., 1879	4757

Patents on which the Stamp Duty of £100 has been paid

Anguste Hyacinthe Blanche, of Boulevard St. Dennis, Paris, "Improved machinery or apparatus for singeing woven fabrics"	18th Nov., 1875	4009
Thomas Fletcher, of Newton Hyde, "Improvements in apparatus employed for bleaching cotton or other fibrous substances of fabrics."	13th Nov., 1875	3954
Samuel Lowe and John William Lamb, both of Nottingham, "Improvements in knitting machinery."	8th Dec., 1875	4260

Copyright of Designs.

(Registered during November, 1882.),

Class VI., Carpets.

388,974	Storey Brothers and Co., Lancaster.
389,001	The Lancaster Oil and Varnish Company, Limited.
389,122	J. E. Stone and Co., Exchange Street, Kidderminster.
389,165-66	James Williamson and Son, Lancaster.

Class XI., Furnitures.

381,959	Compagne du Senégal et de la Côte Occidentale D'Afrique, 7, Brazenose Street, Manchester.
386,960-62	The Rosendale Printing Company, Manchester.
388,995-96	S. and F. Sternberg, 44, George Street, Manchester.
389,096	S. and F. Sternberg, 44, George Street, Manchester.
389,091	R. Dalglish, Falconer and Co., Manchester and Glasgow.
389,171	Arning and Co., Manchester.
389,362-63	D. Lee and Co., Fountain Street, Manchester.
389,383	Boden, Terras and Co., Manchester.
389,392	S. and F. Sternberg, 44, George, Street, Manchester.
389,475-84	Weiss Fries, Mulhouse, Alsace.
389,545	T. Hoyle and Sons, Limited, Manchester.
389,700-05	Thomas Wardel, Leek, Staffordshire.
389,746-77	Edmund Potter and Co., Manchester and Dinting.
389,889	S. and F. Sternberg, 44, George Street, Manchester.
389,969-70	The Rosendale Printing Company, Limited, Manchester.
390,208	Salis Schwabe and Co., 41, George Street, Manchester.
390,221	D. Lee and Co., Fountain Street, Manchester.

Printed for the Publishers by John Dale & Co., 17, *Bridge Street, Bradford, and Published by* Horatio Lord *and* Richard Thomas Lord, *at* 3, *Gerrard Street, Halifax.*

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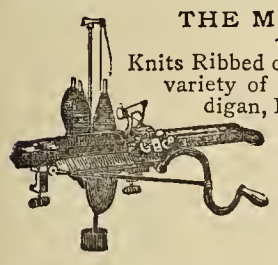

Knits Ribbed or Plain, any size. Knits every variety of Jackets, Petticoats, &c., Cardigan, Fancy, or Plain, exactly same as hand.

This Knitter obtained the First Prize, over others, in competition at the Woollen Exhibition, Crystal Palace, London, 1881. 22 New Improvements. List 1d. Stamp.

W. HARRISON, Patentee,
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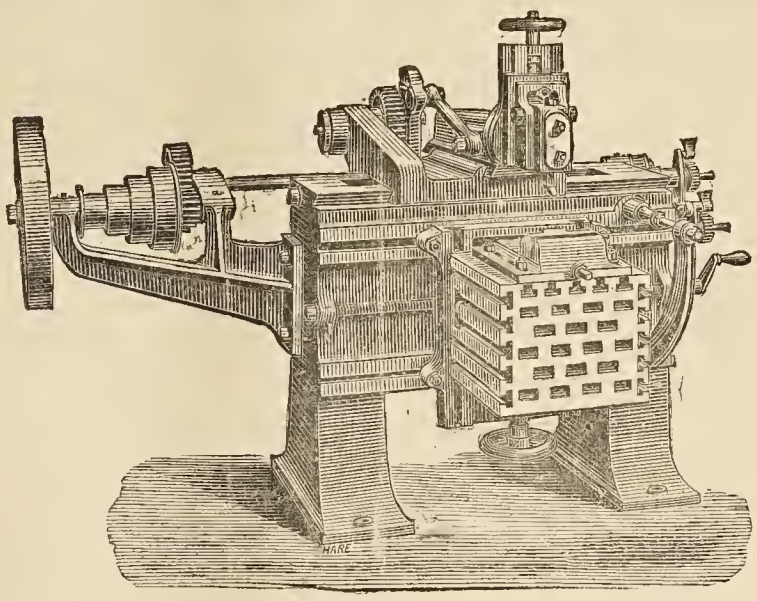

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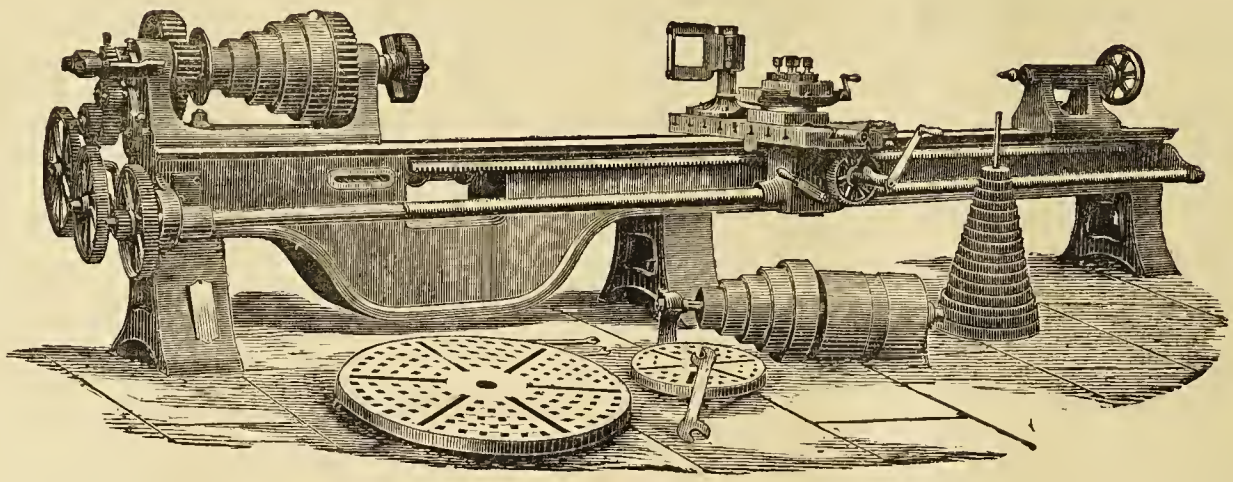

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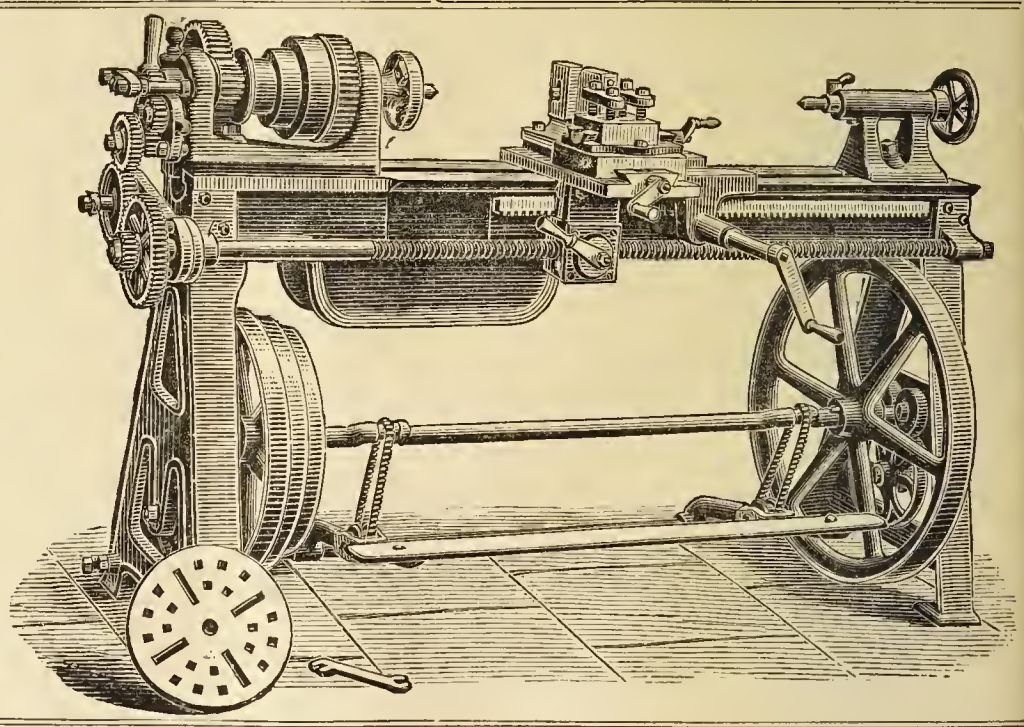

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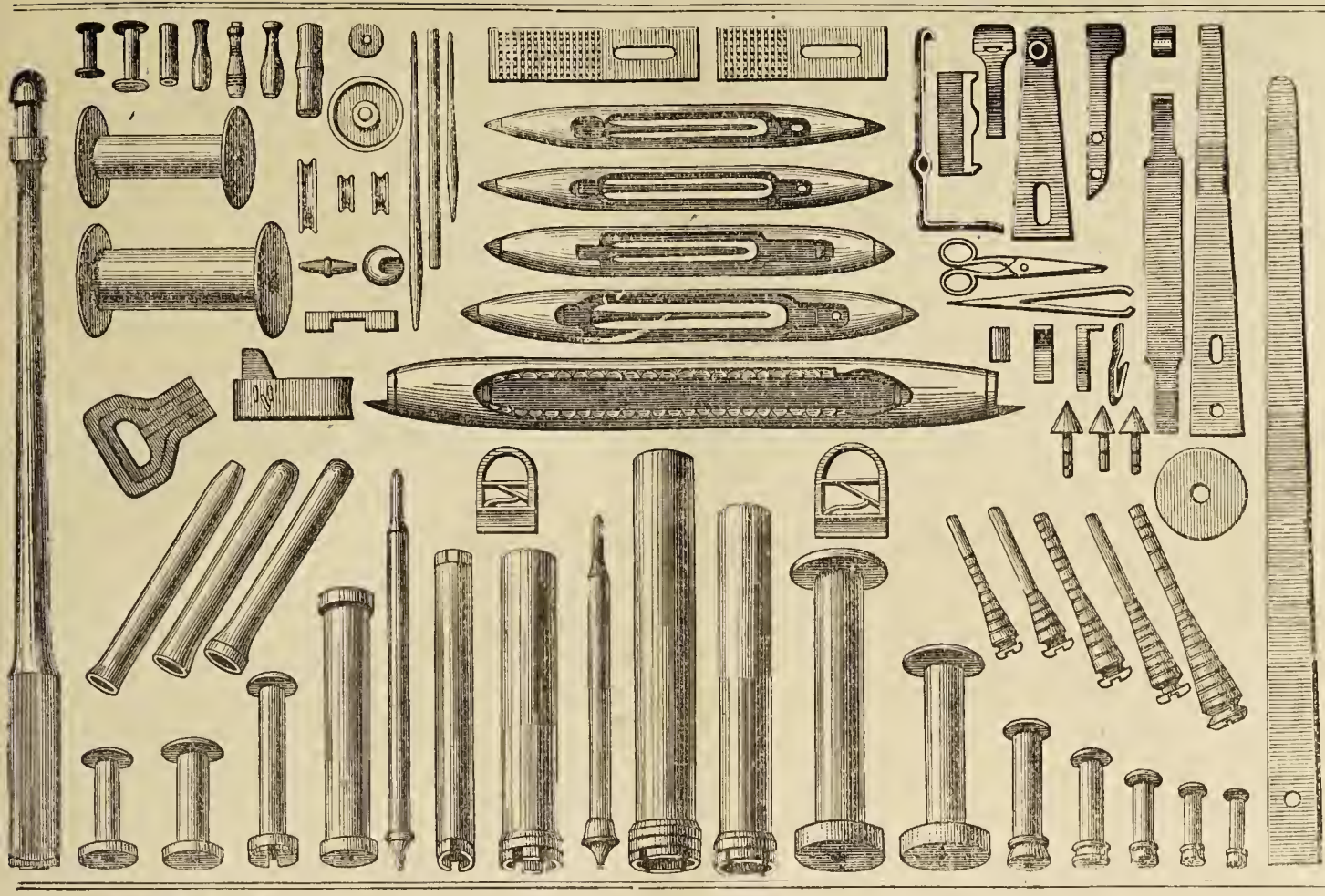

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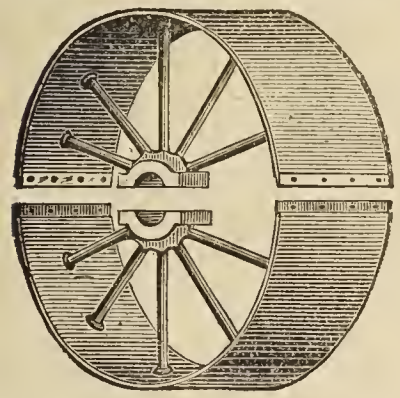

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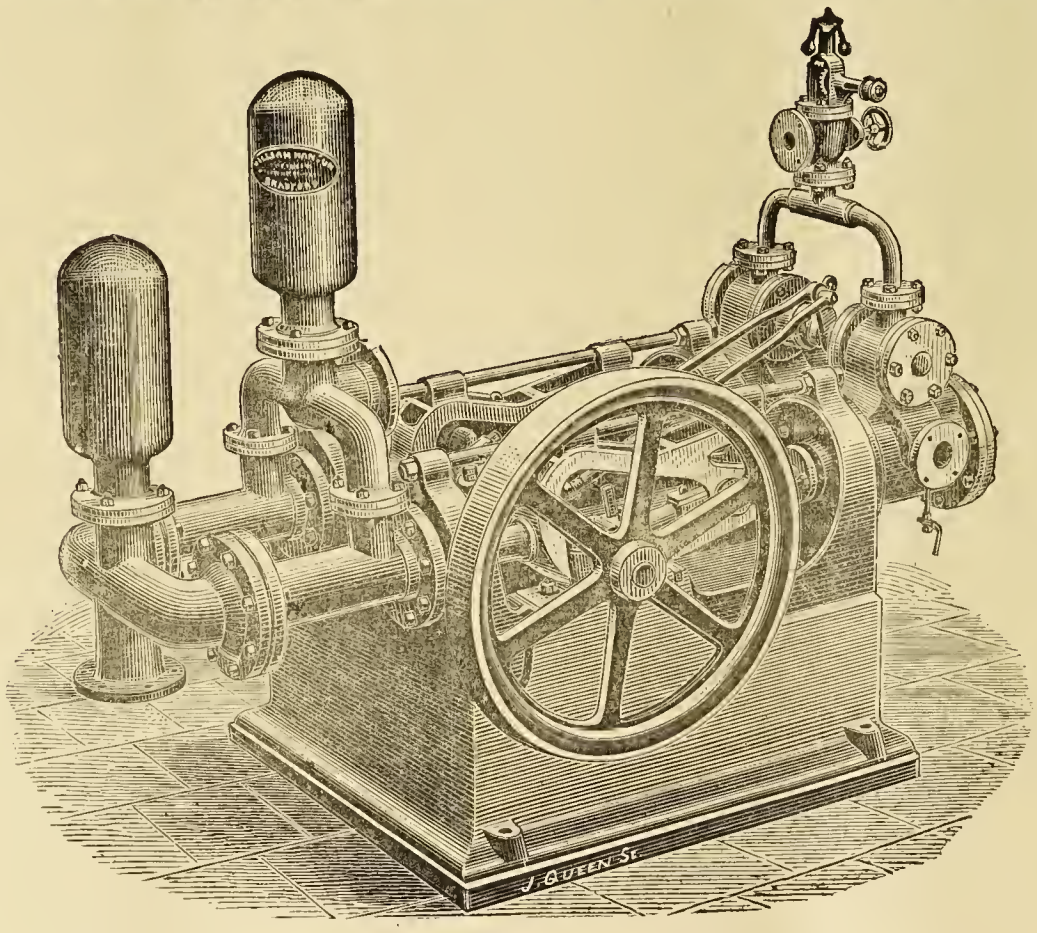
The maker of this Pump has had experience with almost all kinds of Steam Pumps for a great number of years, and has designed this with a view to remedy the many evils in those heretofore made by different makers. The Pump (as will be seen from the annexed woodcut), is very compact, and everything is easy to get at. It is very firm, all being fixed to a strong cast-iron bed, which is so arranged that any water leakage from the stuffing boxes is caught and drained away. All the glands and stuffing boxes are bushed with brass. The crank shaft is much stronger than usually made, to prevent breakage, which frequently occurs in ordinary Pumps. All the necks are unusually large, to prevent wear and tear.

Two kinds of these Pumps are made, one as shewn on the woodcut, for lifting water and as a steam fire engine This Pump will deliver a stream of water as regular and as steady as the town's mains, and when used for fire purposes will give from 90 lbs. to 120 lbs. water pressure, or more if required. The other is used as an ordinary ram Pump for feeding boilers with water.



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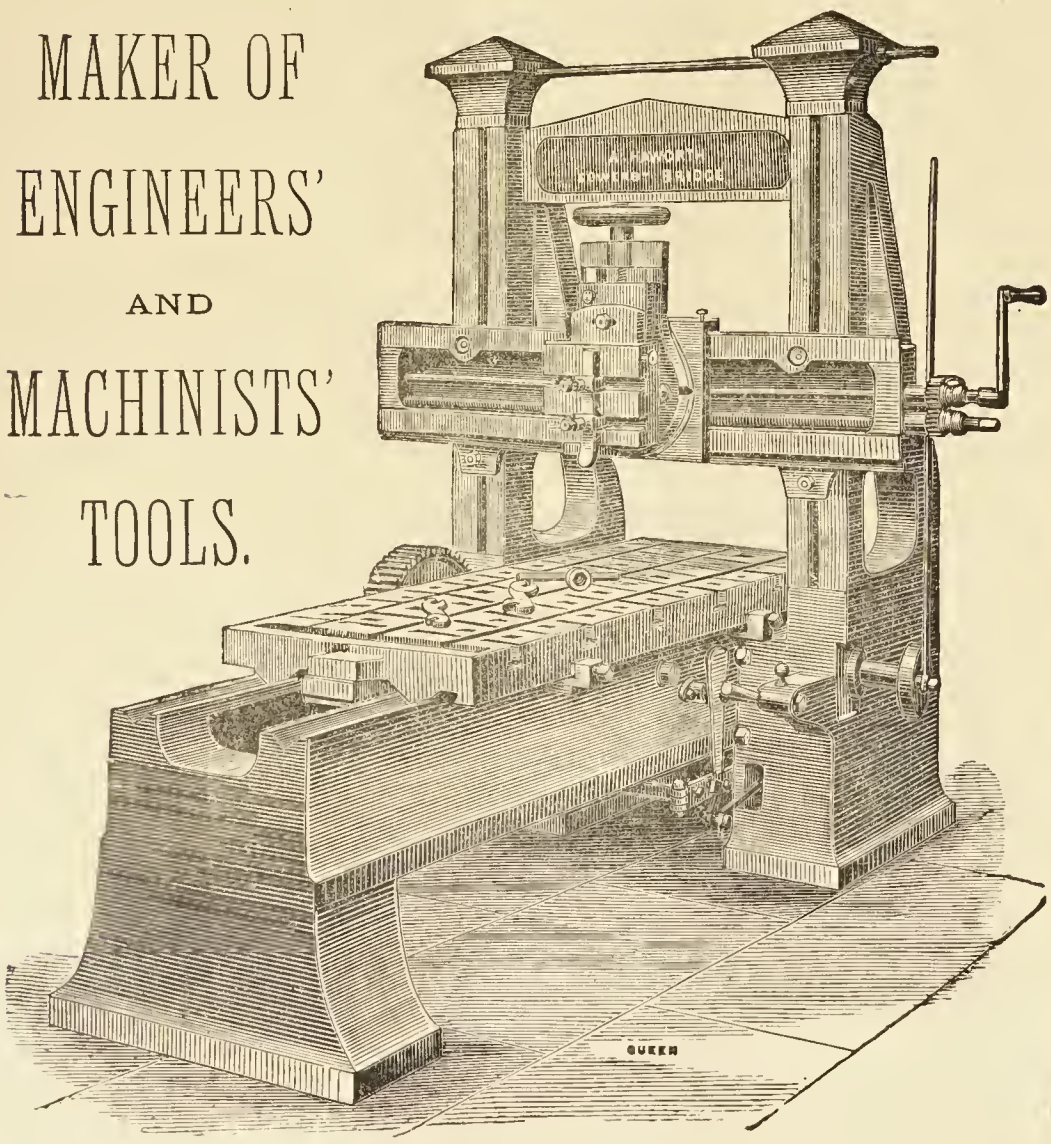

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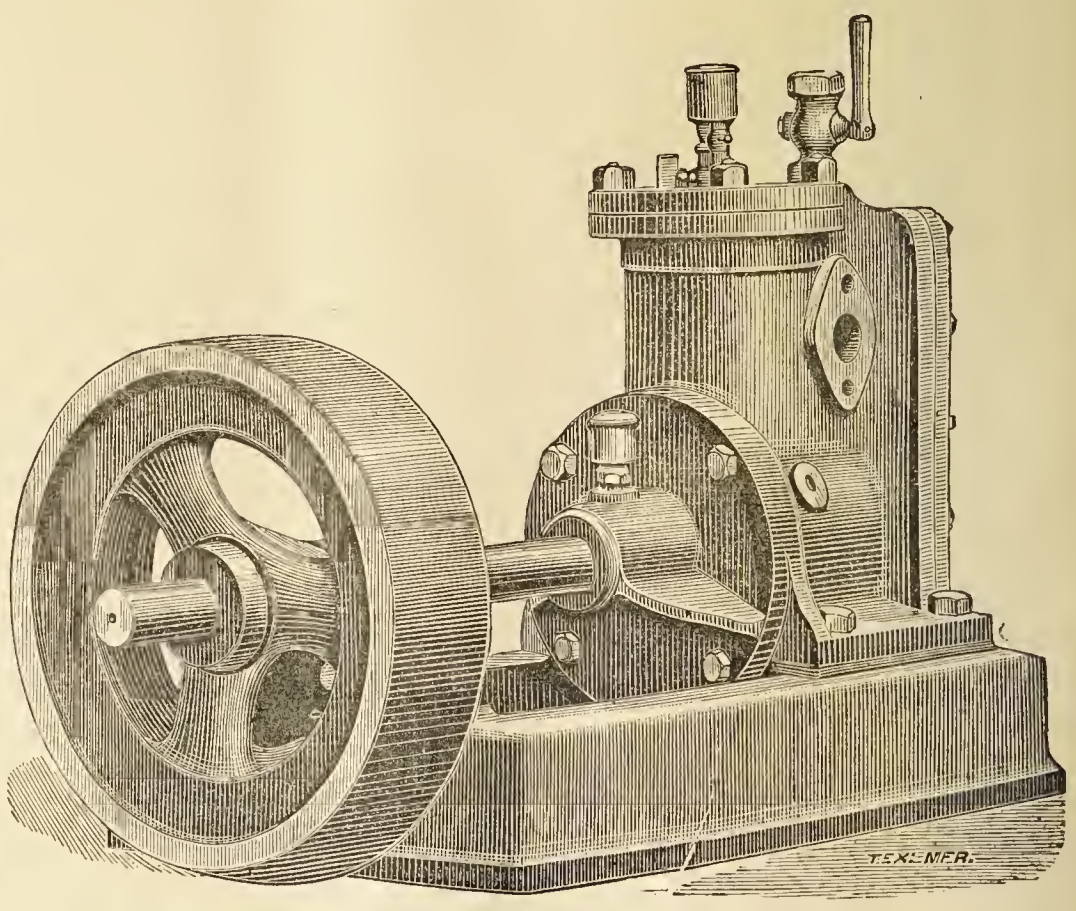

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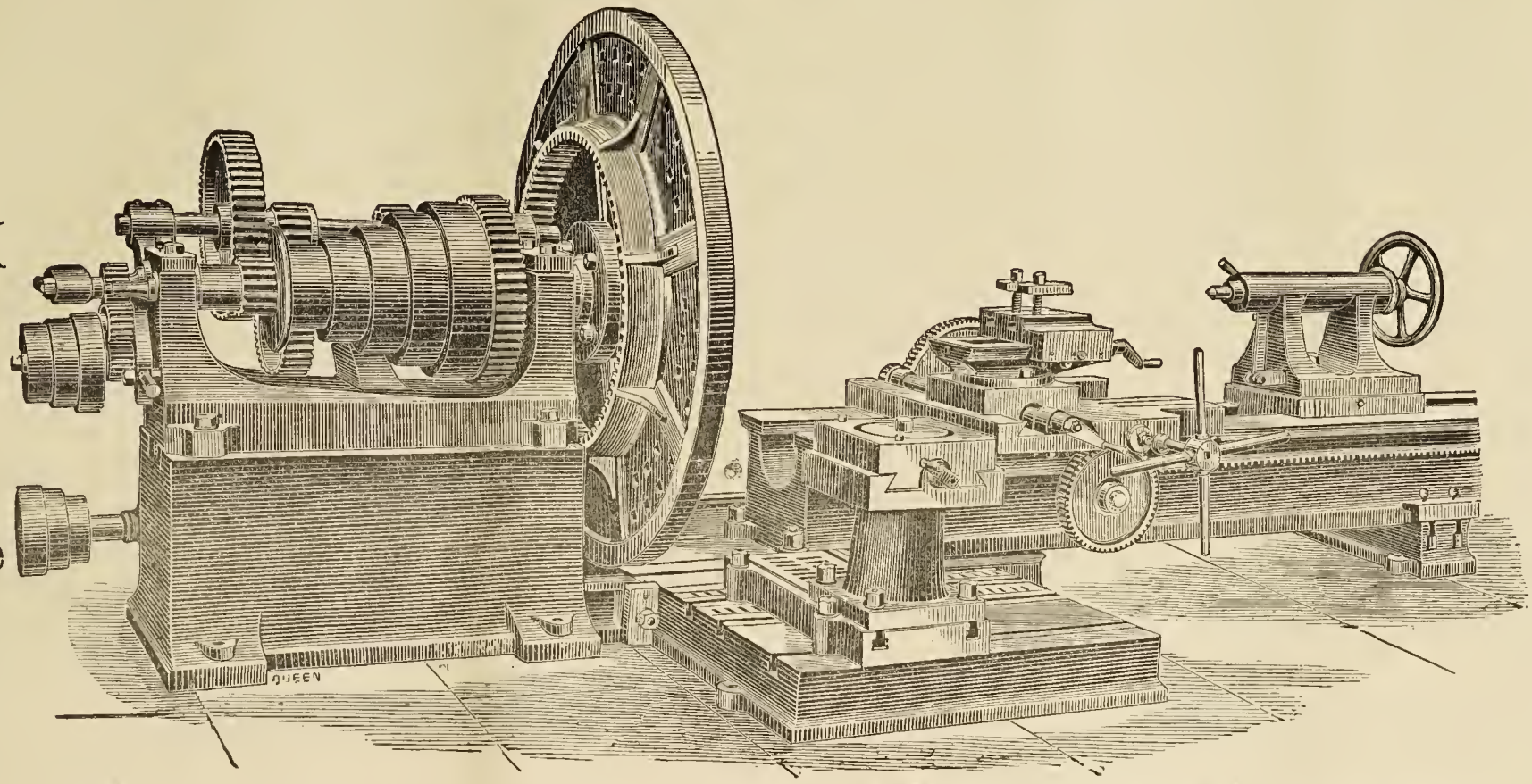

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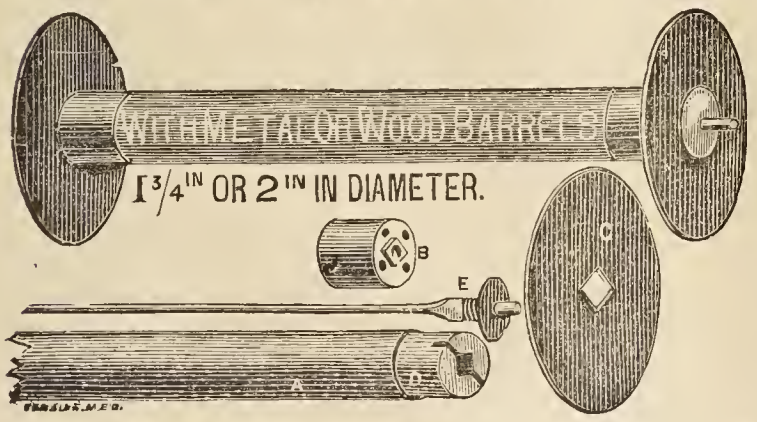

From this sketch it will be seen that when these Bobbins are thrown down, all the shock is sustained by the sides of the square projection B, and not by the pin, as is the case with all other Bobbins, consequently the barrels are not liable to split or break in any way, nor can the heads by any possibility turn round or get loose.

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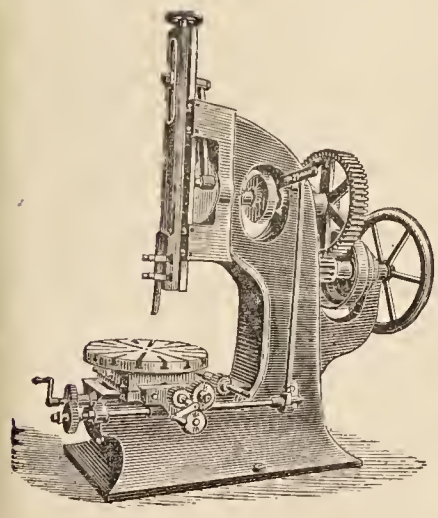

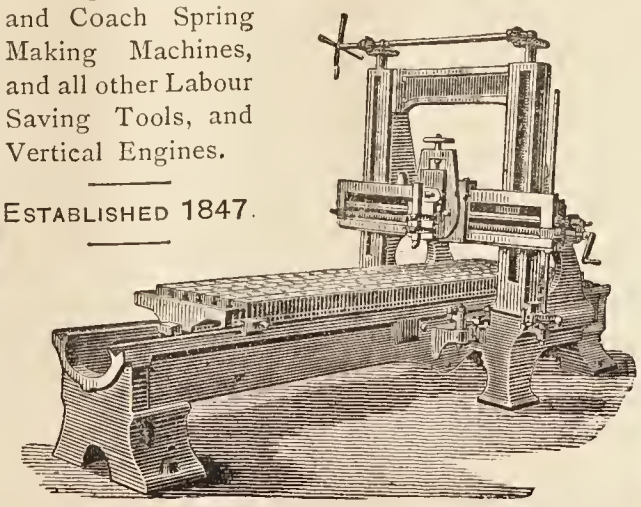

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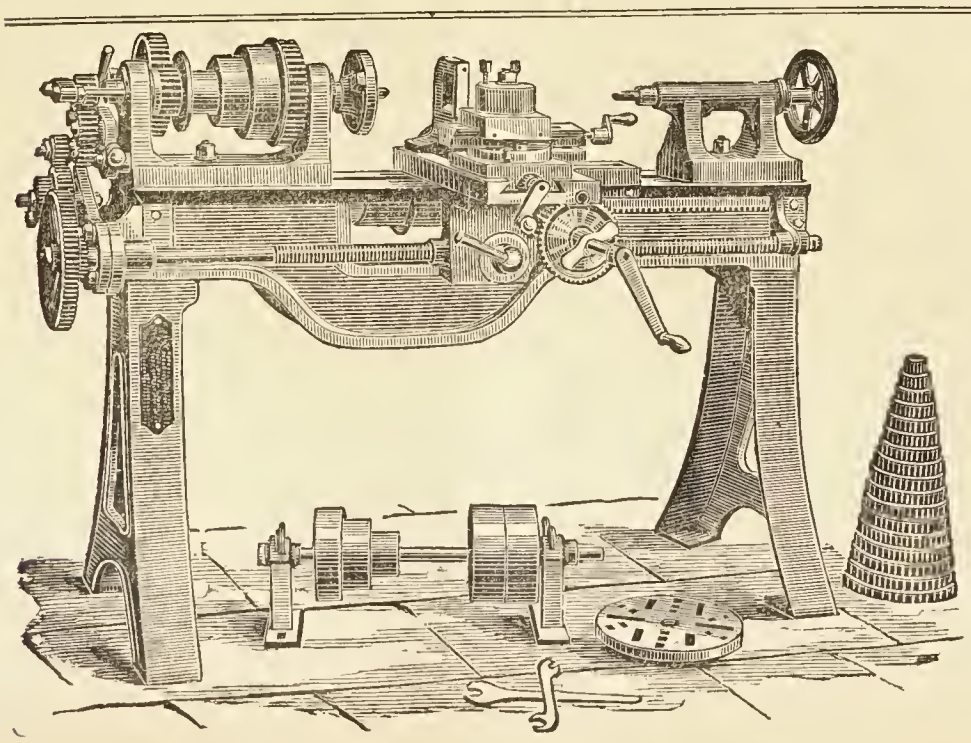

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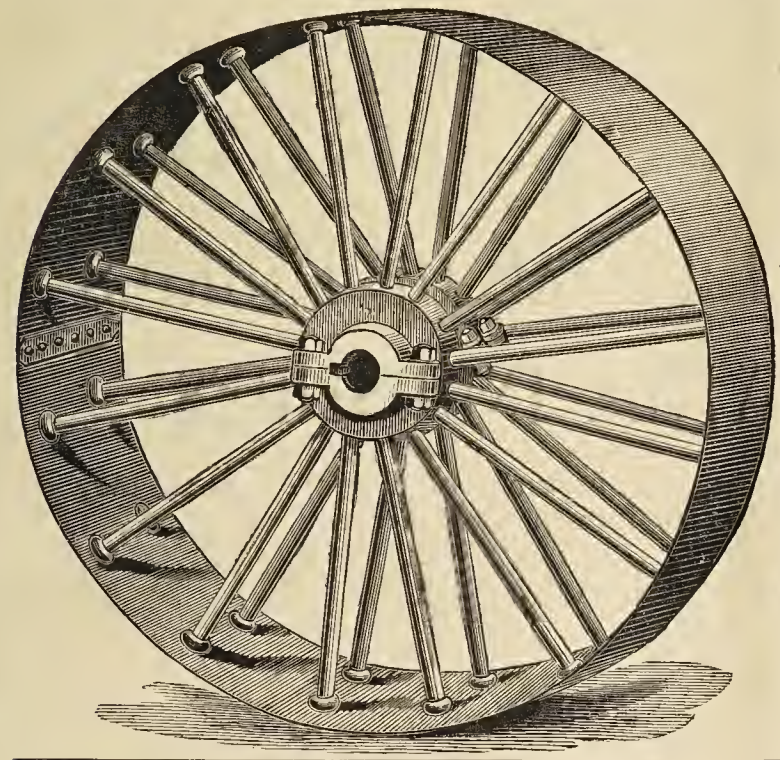

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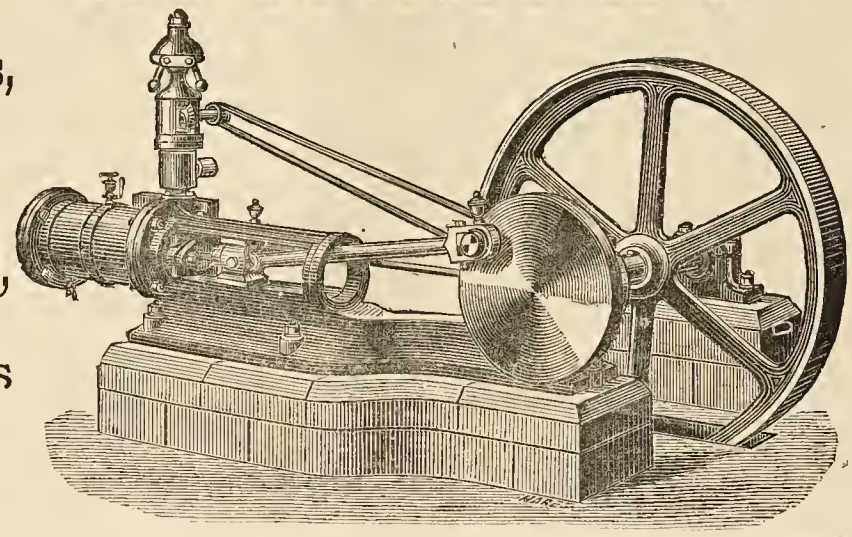

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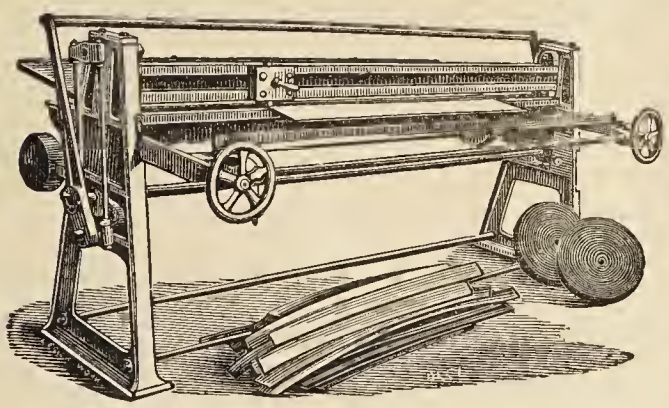

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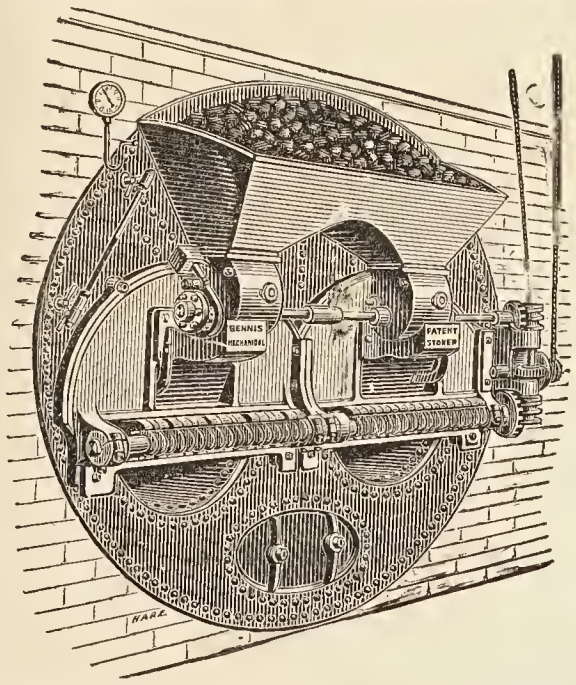

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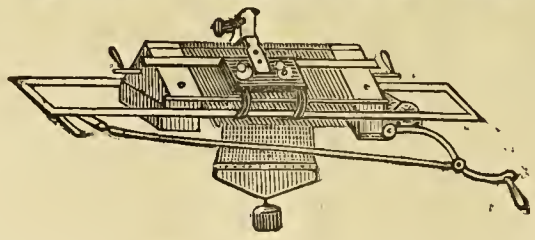

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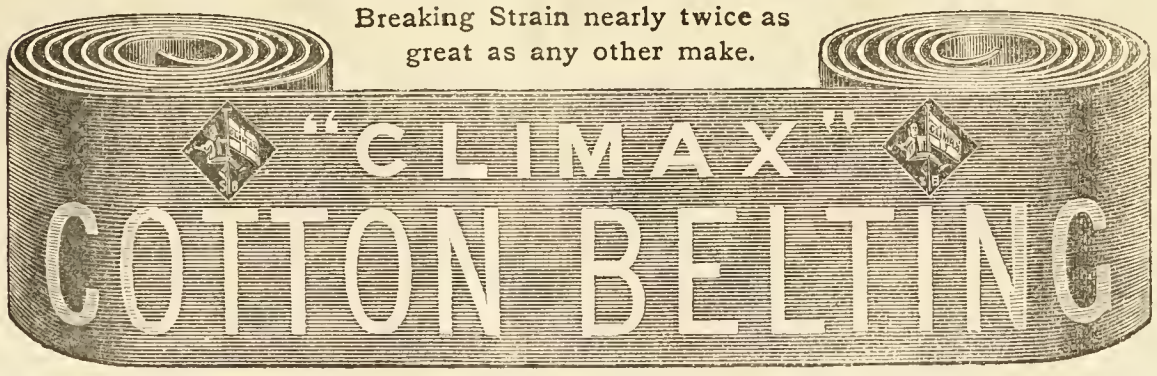

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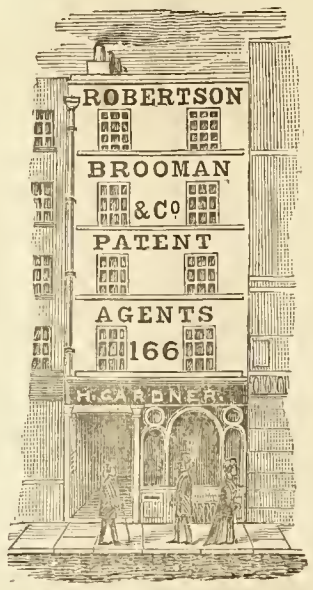

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